

ENGINEERING DEPARTMENT

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trols

# The Refrigeration Service Engineer

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OL. 15 NO. 12

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DETROIT  
DECEMBER • 1947

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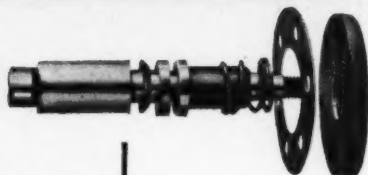
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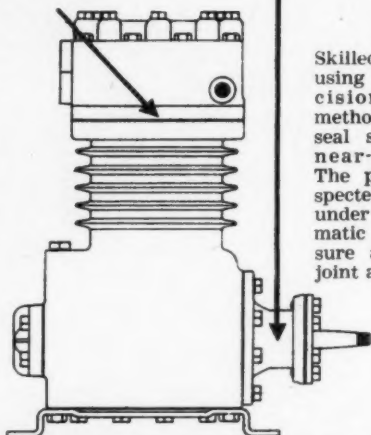
ERATION  
AND  
IONING



# Modernization Pays



The high quality found in all CHICAGO valve plates is the result of accurate machining and careful testing. All sizes are designed for exact replacement on 340 models from the small domestic to 5 H.P. compressors. Replaceable seats are exclusively a feature of all CHICAGO valve plates.



Skilled workmen using modern precision lapping methods finish the seal surfaces to near-perfection. The parts are inspected for flatness under a monochromatic light, to assure a gas-tight joint at all times.

**CHICAGO VALVE PLATES AND SEALS** give trouble-free service. Increase the compressor efficiency—modernize your customer's equipment.

**FOR BETTER PERFORMANCE USE**

**CHICAGO  
VALVE PLATES**

SOLD THROUGH LEADING



**CHICAGO  
SEALS**

REFRIGERATION WHOLESALERS

**CHICAGO SEAL CO.** 20 N. WACKER DR., CHICAGO 6, ILL.

THE REFRIGERATION SERVICE ENGINEER. Nickerson & Collins Co., Publishers, 435 N. Waller Ave., Chicago 44, Ill. Published monthly, Vol. 15, No. 12, December, 1947. Entered as second class matter March 4, 1938, Chicago, Ill., under the Act of March 3, 1879. Subscription in the United States, \$3.00 per year; all other countries, \$4.00 per year.

# DIRTY SERVICE CYLINDERS *cause trouble*

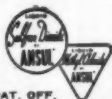
## A DIRTY SERVICE CYLINDER WILL FOUL ANY REFRIGERANT

● The importance of clean service cylinders cannot be over-emphasized. Many service problems are definitely traced to dirty service cylinders. The only remedy is **KEEP YOUR SERVICE CYLINDERS CLEAN.**

Note the easy-to-follow method of cleaning service cylinders illustrated\* and, if you wish additional information, or data on other service cylinder cleaning methods, read **ANSUL Bulletin "KEEPING SERVICE CYLINDERS CLEAN."**

\* If you do not have your own service cylinder cleaning facilities **ANSUL** provides this service for you at a nominal cost. In addition, if requested, **ANSUL** will make the required periodic I.C.C. pressure test for you.

**ANSUL WHOLESALERS** are ready and equipped to render an intelligent, co-operative service to refrigeration engineers and maintenance men on problems which arise from time-to-time in the operation of refrigerating systems.



\*REG. U. S. PAT. OFF.

ANSUL REFRIGERANTS ARE AVAILABLE AT LEADING WHOLESALERS EVERYWHERE.

# ANSUL CHEMICAL COMPANY

REFRIGERATION DIVISION, MARINETTE, WISCONSIN

DISTRIBUTORS FOR KINETICS: FREON 11, FREON 12, FREON 21, FREON 22, AND FREON 113

THE REFRIGERATION SERVICE ENGINEER



1 Remove valve and fuse plug. (Some small cylinders do not have fuse plugs.)



2 Examine interior of cylinder with drop light. (Cutaway view)



3 If scaly, pickle with 5% muriatic acid.



4 Blast inside cylinder with steam and hot air.



5 Cool to 150° F., inspect. Repeat cleaning if necessary.



6 Insert valve and fuse plug.



7 Evacuate.



8 Add refrigerant wash.

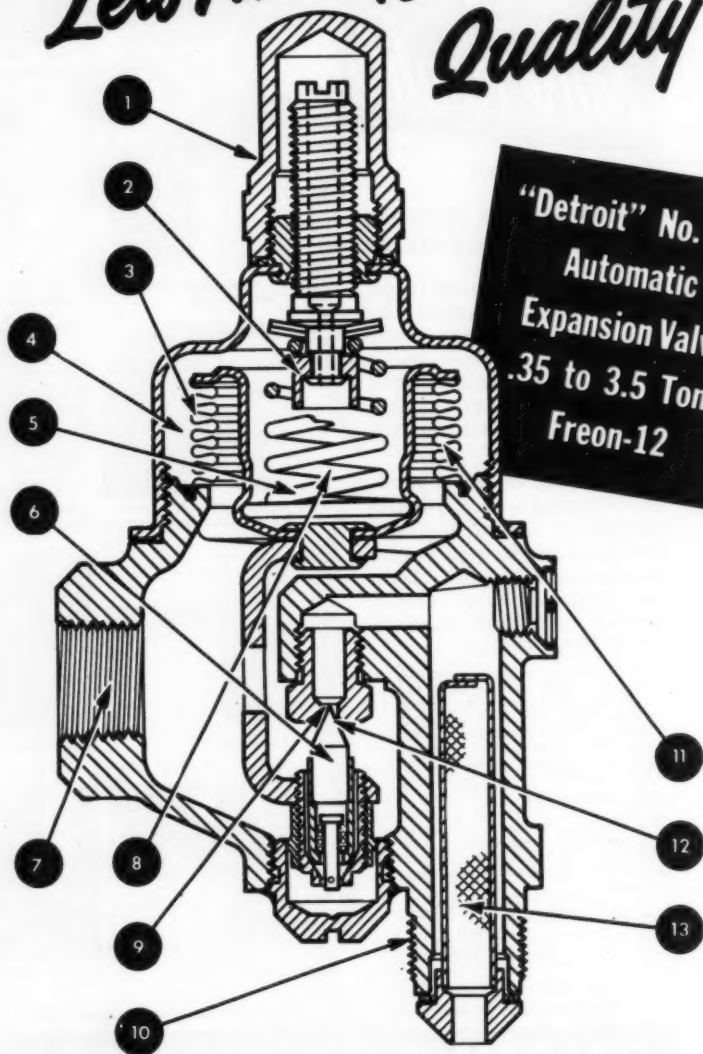


9 Shake and dump.



10 Fill with refrigerant for use.

# Let's Analyze Quality

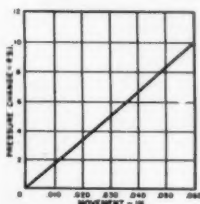


"Detroit" No. 67  
Automatic  
Expansion Valve  
35 to 3.5 Tons  
Freon-12



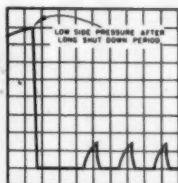
## These Add Up to Perfect Refrigerant Control

- 1 Brass cap and gasket seal  
no moisture infiltration



- 3 Bellows for wide  
range flexibility

Constant suction tem-  
perature—Constant  
motor load



- 4 Anti-chatter dampening fluid

- 6 Swivel type needle  
no rubbing—no leaks

- 5 Pressure or vacuum setting  
with a single spring

### These Add Up to Flexibility of Installation

- 7 Standard outlets available  
 $\frac{1}{4}$ " FPT,  $\frac{3}{8}$ " or  $\frac{1}{2}$ " SAE
- 8 Two ranges available for  
high and low temperature  
applications
- 9 Standard orifices  
 $\frac{1}{32}$ "— $\frac{3}{64}$ "— $\frac{1}{16}$ "— $\frac{1}{8}$ "
- 10 Inlet suitable for  
 $\frac{1}{4}$ " or  $\frac{3}{8}$ " liquid line

### These Add Up to Customer Protection

- 11 Duraflex bellows
- 12 Delubaloy needle and seat
- 13 Strainer furnished with valve

THEY ALL ADD UP TO

*The Famous Quality  
of "Detroit"*  
REFRIGERATION VALVES

2900

**DETROIT LUBRICATOR COMPANY**

General Offices: 5900 TRUMBULL AVENUE  
DETROIT 8, MICHIGAN

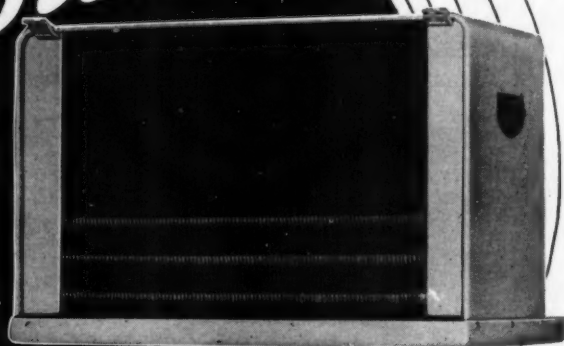


**DETROIT**

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION  
Canadian Representatives: RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Float Valves and Oil Burner Accessories  
"Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

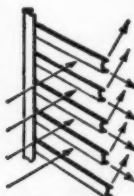
# Foremost



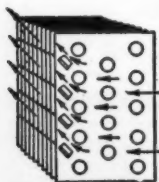
**IN THE  
LOW SIDE  
FIELD**



LIQUID DISTRIBUTOR



AIR DIFFUSER



BUILT-IN LOUVRES

## Filterpure

Combines the most advanced features in Unit Cooler design. Exclusive Betz Coil construction—Patented, built-in Louvres—Patented Liquid distributor—Air Diffuser—Guaranteed Ratings—Heavy Duty Motors—Quiet—Streamlined—Rugged.

Filterpure is the choice of leading Refrigeration Wholesalers, dealers and users from coast to coast.

Sold by leading Refrigeration Wholesalers

**BETZ CORPORATION**

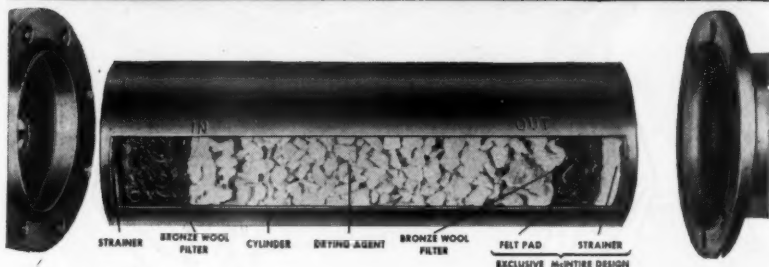
HAMMOND, INDIANA

**BONUS VALUE!**

Every

# DFN DEHYDRATOR

has a built-in STRAINER-FILTER Assembly



## Protects against moisture, acid, sludge, particles

**E**ACH DFN Dehydrator (cartridge type or factory-sealed) is more than a "drier"—it is a scientific assembly which keeps refrigerant lines clear of contaminants that cause freeze-ups, corrosion and clogging.

**HIGH CAPACITY DRYING.** Each DFN Dehydrator and Cartridge is baked at 300° F. for 3 to 4 hours (according to drying agent used) in controlled temperature ovens to remove all trace of adsorbed moisture—then sealed to preserve full-strength dehydration

until used. This provides greater moisture adsorbency on the line, less frequent servicing.

**STRAINER-FILTER ASSEMBLY.** Utilizes the exclusive DFN coarse-to-fine filtering principle, through strainer screen, bronze wool filter and wool felt filter, to trap finest particles—prevent packing and clogging—permit free flow of refrigerant, without pressure drop.

Ask your wholesaler about DFN Dehydrators. Write for Catalog R-7.

McIntire Connector Co., 225 Jefferson St., Newark 5, N. J.



*Only the*

**DFN**  
SYSTEM

**DEHYDRATES  
FILTERS  
NEUTRALIZES**

DEHYDRATORS • STRAINERS

FILTERS • NEUTRALIZERS

SERVICE ENGINEER

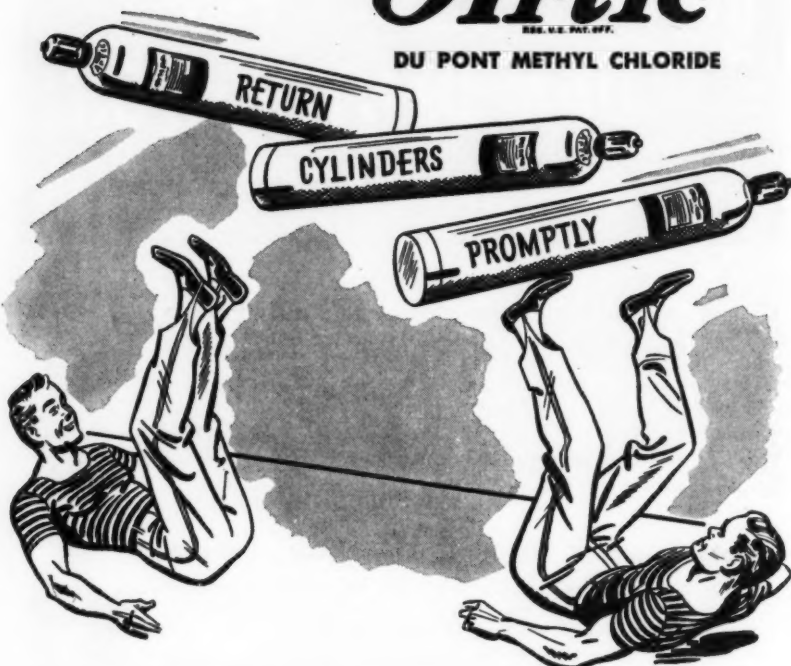
December, 1947

# SPREAD THE SUPPLY OF

## *Artic*

REG. U.S. PAT. OFF.

**DU PONT METHYL CHLORIDE**



- 99.5% PURE, DRY, UNIFORM
- IN ALL STANDARD CONTAINERS
- COAST-TO-COAST DISTRIBUTION

*E. I. du Pont de Nemours & Co. (Inc.),  
Electrochemicals Dept., Wilmington 98, Delaware.*

**DU PONT  
FOR  
QUALITY**

## **DU PONT METHYL CHLORIDE**

BETTER THINGS FOR BETTER LIVING  
THROUGH CHEMISTRY





*Faithful!\**

Once every 64 minutes, preceded by a deep-throated rumble and an earth-shaking growl, Old Faithful casts steam and boiling water toward the blue Wyoming sky. Its beauty and its regularity combine to make this geyser one of nature's greatest wonders. Visitors to Yellowstone National Park are awed and delighted by this natural clock which, within the memory of man, has not deviated from its self-regulated schedule.

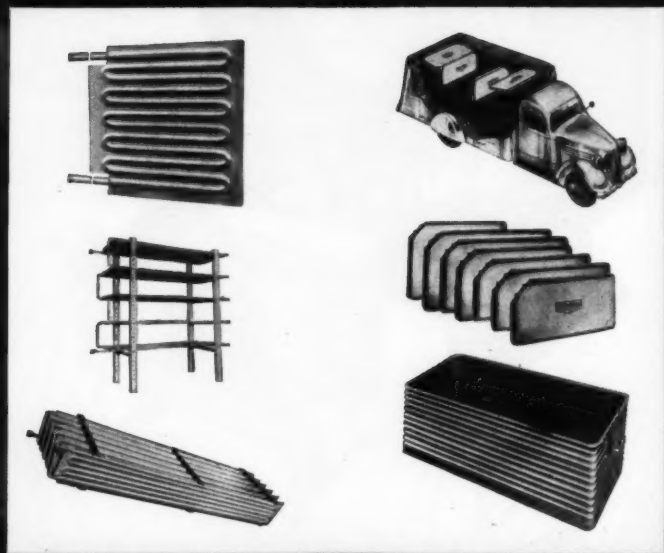
\* *The kind of performance delivered by Mills Condensing Units.*

*Mills Condensing Units*

Mills Industries, Incorporated  
4100 Fullerton Ave., Chicago 39, Ill.

# KOLD-HOLD *Design*

## opens the door to Refrigeration Profits



KOLD-HOLD "Quick Action" Serpentine Plates have a multitude of applications and combinations... all profitable to the user. Used separately, in banks, in plate stands, or as cabinet liners, they assure you the following advantages:

1. Easy installation.
2. Maximum prime surface.
3. No possibility of short circuiting the flow of refrigerant which flows in one continuous pass from inlet to outlet.
4. Highest rate of plate heat acceptance.
5. Oil logging positively prevented.
6. Minimum pressure drop.
7. Tested under pressure.
8. An appreciably higher "K" factor.
9. Thoroughly cleaned and dehydrated.

# KOLD-HOLD

Jobbers in Principal Cities

**KOLD-HOLD MANUFACTURING CO.,**

**PROCESSING** **TRANSPORTATION**  
protects every step of the way

**STORAGE**

502 E. Hazel St., Lansing 4, Michigan

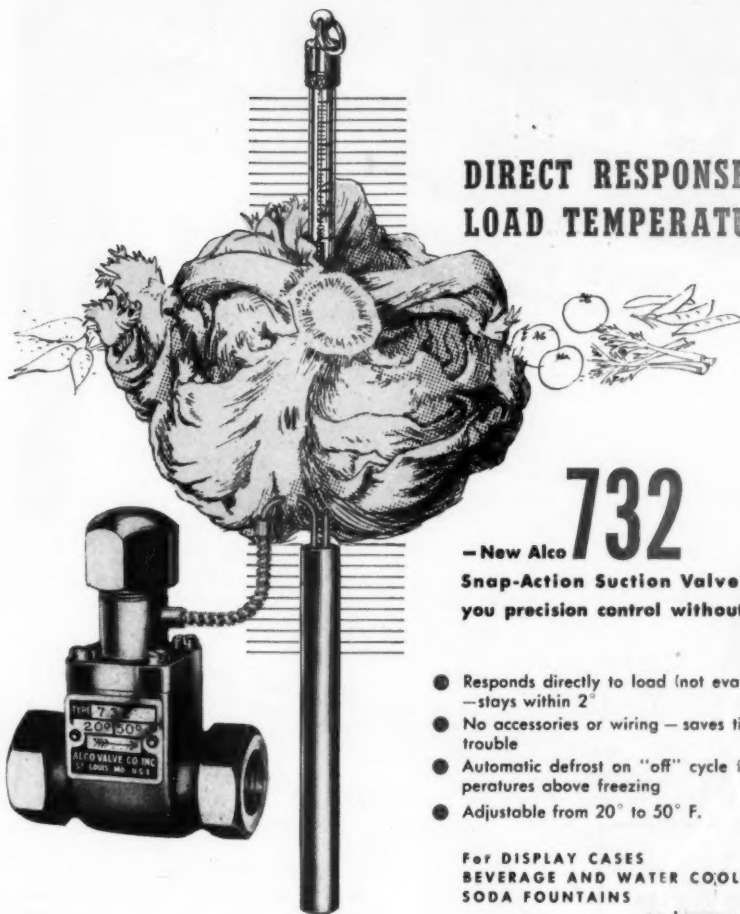
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8

THE REFRIGERATION

SERV





## DIRECT RESPONSE TO LOAD TEMPERATURE!

— New Alco **732**  
Snap-Action Suction Valve gives  
you precision control without wires

- Responds directly to load (not evaporator)  
— stays within 2°
- No accessories or wiring — saves time and trouble
- Automatic defrost on "off" cycle for temperatures above freezing
- Adjustable from 20° to 50° F.

For DISPLAY CASES  
BEVERAGE AND WATER COOLERS  
SODA FOUNTAINS

and many others

Sold by leading refrigeration supply wholesalers  
everywhere. Send for Bulletin 732.



Designers and Manufacturers  
of Thermostatic Expansion  
Valves; Evaporator Pressure  
Regulators; Solenoid Valves,  
Float Valves; Float Switches.

# ALCO VALVE CO.

857 KINGSLAND AVE. • ST. LOUIS 5, MO.

**TRACE** IS "very effective"  
... SAYS MR. MANNING

**KELMORE REFRIGERATION SERVICE, Inc.**  
*Commercial Refrigeration and Air Conditioning*  
599 SPRINGFIELD AVENUE  
NEWARK 3, NEW JERSEY

Oct. 20, 1947

Highside Chemicals Co.,  
195 Verona Ave.,  
Newark, N. J.

Gentlemen:

We have used your product TRACE over a considerable period of time and have found it very effective in locating hard-to-trace refrigerant leaks.

We are pleased to recommend this product wherever refrigerant leaks are suspected.

Very truly yours,

*A. E. Manning*  
A. E. MANNING  
Vice-President

**TRACE**

REFRIGERANT  
LEAK DETECTOR



**HIGHSIDE CHEMICALS COMPANY**  
NEWARK 4, N. J.  
195 VERONA AVE.,

ALSO  
MAKERS OF →

**THAWZONE**

PATENTED  
THE PIONEER FLUID DEHYDRANT

★ for the man who wants one flaring tool  
for all sizes of tubing  $\frac{1}{8}$ " to  $\frac{3}{4}$ " O.D.

IMPERIAL

WIDE-RANGE

# FLARING TOOL



No. 375-FS Wide-Range Flaring Tool complete in metal kit. Price each \$6.55

Now, in one compact kit you can have a flaring tool that will flare 9 different sizes of soft copper, brass, or aluminum tubing.

This wide range flaring tool has two flaring bars and the popular slip-on yoke. One bar flares  $\frac{1}{8}$ ",  $\frac{3}{16}$ ",  $\frac{1}{4}$ ",  $\frac{5}{16}$ ",  $\frac{3}{8}$ " and  $\frac{7}{16}$ " O.D. sizes. Other bar flares  $\frac{1}{2}$ ",  $\frac{5}{8}$ ", and  $\frac{3}{4}$ " O.D. sizes. No need to have several tools to cover a complete size range.

Tool is very easy to handle and is designed for fast flaring. The self-centering slip-on yoke is quickly slipped over bar — a slight turn holds it in place for making accurate 45° SAE flared joints. Swivel cone adds to ease of operation.



Simply slip yoke over top of bar. Inside edges are slotted so that a slight turn holds it in place.

THE IMPERIAL BRASS MFG. COMPANY  
534 S. Racine Ave., Chicago 7, Illinois

*See your jobber*

Fittings • Valves • Dehydrators • Filters •  
Flare • Choke Lines • Tools for Cutting

IMPERIAL

*A New  
Better  
Different*



SEE US AT  
CLEVELAND  
BOOTH 125

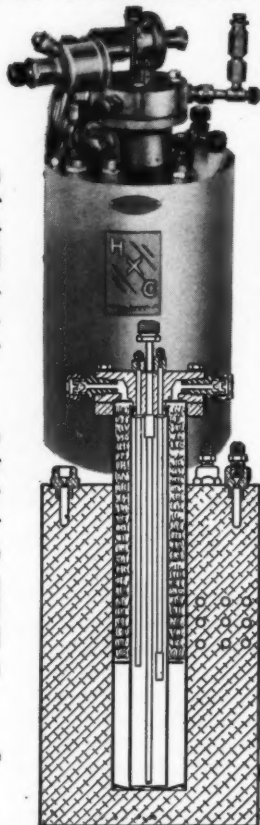
## COOLER CARBONATOR

SELF-CONTAINED FOR A VARIETY OF APPLICATIONS

● The famous Heat-X-Cast Aluminum Cooler now incorporates a carbonator . . . and like all other Heat-X equipment . . . is compact, simple, efficient and rugged. Result: a unit with many advantages for soda fountains, counter dispensers, vending machines and other applications.

**HOW IT WORKS:** Water entering the casting is cooled and then alternately with  $\text{CO}_2$  gas enters the mixing chamber in the lucite carbonator head. Water and gas pass through atomizing orifice holes, and stainless steel wool permitting absorption of the gas. The carbonated water level in the bottom of the shell controls the water pump through a floatless relay.

Compact pump, motor and relay in one small unit.



**THE HEAT-X-CHANGER CO., INC.**  
415 Lexington Avenue, New York 17, N. Y.      Brewster, N. Y.

WHEN YOU RECHARGE



with Virginia SO<sub>2</sub>

If you value your time, you should value Virginia "Extra Dry Esotoo," the sulfur dioxide that is consistently pure. When you recharge with "Esotoo," you take the first step in eliminating costly and time-consuming call-backs. Every cylinder is triple-tested to make certain that no dirty, oily or wet product will be shipped—reasons enough why "Esotoo" maintains its international reputation for high quality and dependability. VIRGINIA SMELTING COMPANY, West Norfolk, Va. Established 1898.

Distributors for  
Kinetic's "Freon" Refrigerants

**VIRGINIA**  
Refrigerants



"EXTRA DRY ESOTOO"

Buy from Your  
Wholesaler

WEST NORFOLK • NEW YORK • BOSTON • DETROIT

SERVICE ENGINEER

13

December, 1947

# RECORDED

## PROOF OF PERFORMANCE



### TEMPERATURE RECORDER

Standard Ranges  
24 Hour Chart Rotation

- 20° to +40°F.
- 10° to +50°F.
- 30° to 60°F.
- 40° to 100°F.
- 70° to 130°F.

TEMPSCRIBE Recorders have many applications of practical value to stimulate sales of new appliances, promote customers' good will, and build profitable service business.

TEMPSCRIBE Recorders do what indicating instruments can't do—they give a 24-hour record of temperature and motor on-and-off time. There is no waste of time watching thermometer readings or clocking motor operation. Just leave your TEMPSCRIBE Recorders on the job for a time while you handle some other work.

TEMPSCRIBE charts—made before and after servicing—are tangible proof of an installation or service job well done. If the charts indicate that a complaint is due to abnormal use or improper location of the appliance, you have indisputable evidence on hand to explain the situation to the housewife, storekeeper, or plant operator.

In the show room, TEMPSCRIBE charts convincingly prove that temperatures in freeze chest and storage space are maintained within the desired range even at high room temperature.

TEMPSCRIBE Recorders may be used on practically any household and commercial refrigeration unit, such as dual-temperature refrigerators, home and farm refrigerators, refrigerated display cases, reach-in freezers, walk-in coolers, ice cream cabinets, frozen food cabinets, and refrigerating equipment used in food freezing plants and locker plants.

### Convertible to Motor Operation Recorder, or Different Temperature Range, Simply by Changing Door

Any TEMPSCRIBE can be quickly converted to a different temperature range, or to a time-operation recorder, by replacement of the door that forms the front of the recorder. Door removal simply requires lifting out the hinge pin.

The pen of the Operation Recorder is actuated by an electro-magnetic armature, made for either series connection (plug-in connections shown at right) or for parallel connection. Either type has voltage range up to 250 volts, amperage range up to 20 amperes.

For refrigeration shop and service work a widely used TEMPSCRIBE combination comprises one clock case with spring-wound clock for 24-hour chart rotation and two doors (one with -20° to +40°F. temperature element, and one with mechanism for recording motor on-and-off time).



*Ask your jobber about TEMPSCRIBE,  
or write for Bulletin 731*

**BACHARACH INDUSTRIAL INSTRUMENT CO. RECORDER for  
7000 BENNETT STREET • PITTSBURGH 8, PA. MOTOR OPERATION**





*Always in demand!*



**... you can sell  
TEMPRITE draught beer coolers  
in EVERY SEASON!**

Summer, winter, spring or fall . . . every season is the right season to push the sale of Temprite draught beer coolers! **DON'T MISS** the profit possibilities in Temprite coolers just because the weather cools off. *Draught beer is always in demand in EVERY SEASON.*

Temprite units are ideal for both reconditioning (where the condensing unit is available) or new installations.

**Immediate delivery—Catalog available**

**TEMPRITE PRODUCTS CORP.**

*Originators of Instantaneous*

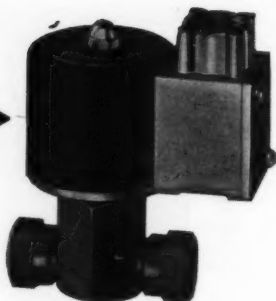


*Liquid Cooling Systems*

**45 PIQUETTE AVENUE**

**DETROIT 2, MICHIGAN**

**2 Tons Freon SV 21**  
Brass body, renewable soft Neoprene seat. Come-apart construction with rotatable coil and aluminum junction box.  $\frac{3}{8}$ " F.P.T. connection.

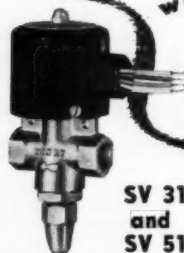


**SV 11 1 Ton Freon**  
Brass body, mounted in standard electrical outlet box. Easily installed.  $\frac{3}{8}$ " F.P.T. connections.



INTERNAL PARTS OF HENRY SOLENOID VALVES ARE MADE OF STAINLESS STEEL.

*Henry Solenoid Valves*  
choice of refrigeration engineers who want quiet, efficient valves  
...of advanced design!



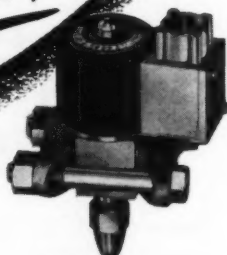
**SV 31 and SV 51**

**3 Tons and 5 Tons Freon**  
Brass body, come-apart construction with rotatable coil housing. Two piece impact plunger with direct acting metal-to-metal seat on SV 31. Neoprene seat on SV 51. Manual operating stem.  $\frac{3}{8}$ " and  $\frac{1}{2}$ " F.P.T. or solder connections.



**SV 101 and SV 201**

**10 Tons and 20 Tons Freon**  
Brass body with flanged come-apart construction. Pilot-piston operated. Connections  $\frac{3}{4}$ " F.P.T. or  $\frac{1}{2}$ " O.D. solder.



**SV 22**

**10 Tons Ammonia**  
Steel body with come-apart construction and hardened steel renewable seat. Aluminum junction box. Manual operating stem.  $\frac{3}{8}$ " and  $\frac{1}{2}$ " F.P.T. flanged connections.

SOLD BY LEADING IOBBERS

**HENRY VALVE COMPANY**

Control Devices, Valves, Driers, Strainers and Accessories for Refrigeration and Air Conditioning and Industrial Applications

3260 W. GRAND AVENUE • CHICAGO 51, ILLINOIS



Cable: HVALCO CHICAGO 51

# AMAZING NEW

## Electric IMPACT Tool



- Applies and removes nuts
- Drills • Reams • Taps
- Drives and removes screws
- Drives and removes studs
- Extracts broken cap screws and studs
- Runs wire brushes
- Does hole saw work
- Drills brick and masonry
- Drives wood augers

Uses standard  
attachments

**P**owered with special, reversible universal electric motor... plug into any wall socket... no torque reaction to the operator ...takes the drudgery out of a multitude of maintenance and production jobs\*... see our nearest branch office or distributor.

## Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y. 20-3

# YOU SHOULD KNOW ABOUT THE NEW *Cross-Flo* "DRIERS THAT POSITIVELY WILL NOT CLOG!

says Mr. Ken Newcum, president of REMCO, Inc.

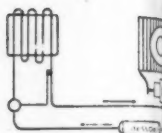
"And No... I'm not sticking my neck 'way out when I say 'will not clog.' I know from the compliments and endorsements we've had from thousands of refrigeration men and service engineers that CROSS-FLO drier-filters will do all we claim for them. These same thousands have installed CROSS-FLO's on their large commercial jobs and, as a result, have changed their entire viewpoint on driers—they now agree that our exclusive new principle of flowing the refrigerant slowly ACROSS the thin cylindrical bed of drying agent, instead of forcing it through a long powder-clogged bed, has prompted an almost revolutionary new conception of drier operation.



## WHERE DO YOU INSTALL YOUR DRIER-FILTERS?

### In the Liquid Line?

At this location the refrigerant is hottest and the drying agent 'least' efficient. CROSS-FLO permits this installation because it positively eliminates pressure drop and clogging.

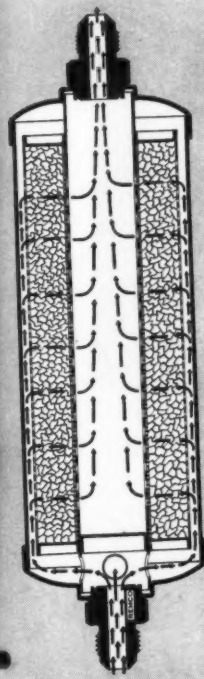


Between Refrigerant Con-



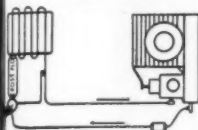
Use this information to  
cause it positively  
drop and clogging.

REMC O INC.  
711-A ZELLENOPLE, PENNSYLVANIA



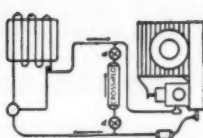
### Between Refrigerant Control and Evaporator?

At this location the refrigerant temperature is lowest and the efficiency of the drier highest. CROSS-FLO is ideal for this location—use with a filter in the liquid line to keep out foreign matter.



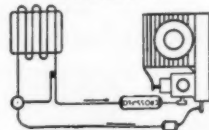
### In By-Pass Between Liquid and Suction Line?

Open valve all the way. Open valve slightly and regulate it to keep frost line between drier and compressor. CROSS-FLO takes full advantage of low-temp refrigerant—becomes very efficient in this installation.



### In the Suction Line?

Because of the exclusive CROSS-FLO design, REMCO Heavy-Duty may be installed in the suction line on all sizes, up to and including low size of connections to suit the size of the drier. The drier... CROSS-FLO may be left in the suction permanently.



For answer to these and other everyday refrigeration problems, write for additional literature, information and literature. Request Circular 711-A, Remco, Inc., Zellenople, Pa.

Look at the above diagram . . . follow those arrows . . . see the slow flow of the refrigerant ACROSS the thin cylindrical bed of drying agent and through the extra large, highly-efficient fine filter. You'll see the answer, in a nutshell, to "CROSS-FLO'S" efficiency.


You owe it to yourself and to your future business to examine and try the new heavy-duty "CROSS-FLO." See it at your wholesaler's now.

# REMC O

**I N C O R P O R A T E D**  
**ZELLENOPLE, PENNSYLVANIA**

See and examine the new Heavy-Duty "CROSS-FLO" in Booth No. 425 at the Cleveland All-Industry Exposition.

**DRIERS • DRIER-FILTERS • FILTERS • HEAT-EXCHANGERS**



**THEY'LL BE THERE!**

**BOOTH 425**

**ALL-INDUSTRY EXPOSITION**

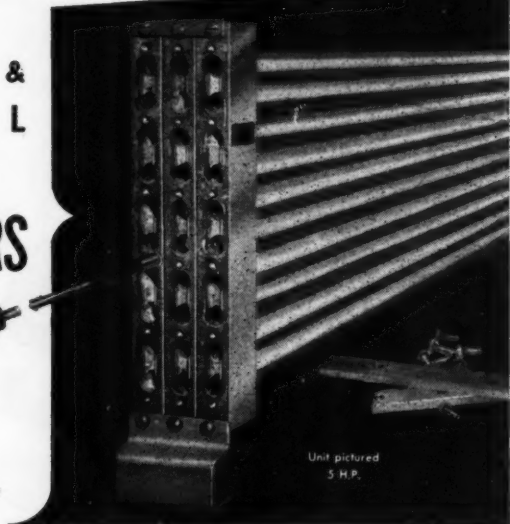
**CLEVELAND — JAN. 26-29**

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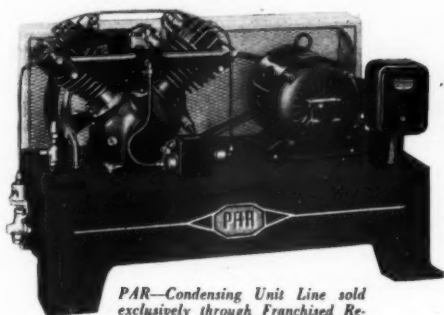


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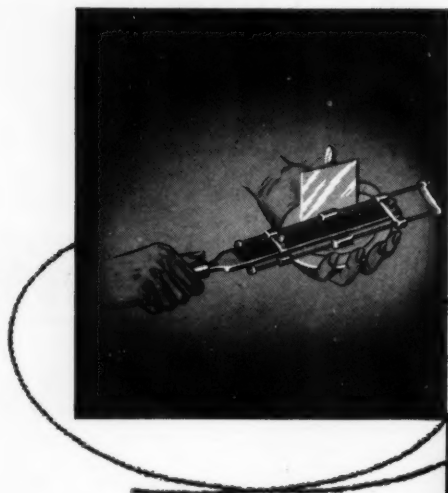
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SERVICE ENGINEER

23

December, 1947

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**JANUARY 26-29**



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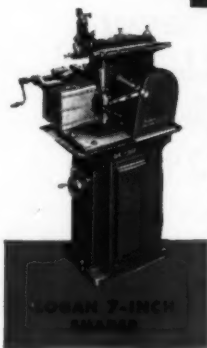
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CONTROLS



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ENGINEERS SOCIETY**

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## *Contents*

In This Issue.....	29
Refrigeration—A Basic National Necessity in Peace or War—by Wm. B. Henderson.....	31
New Impact Tool Speeds Up Service.....	34
"De-Mystifying" Superheat—by John M. Schlemmer..	36
West Coast Wholesaler Modernizes Quarters.....	38
California Servicemen Become Buyers of Trade-Ins —by Bert Merrill.....	40
Take the Guess Out of Estimating —by Donald F. Daly.....	41
Proposed Miami Ordinance.....	47
NARC News.....	51
Questions and Answers:	
Comments on Questions.....	52
Water Cooling in Bottling Plant.....	52
Fur Storage Room.....	53
Service Pointers:	
Comments on Pointers.....	54
Lapping Tool.....	54
Repairing Hinges.....	54
Cost of Guarantee on Used Boxes.....	55
Blue Finish for Steel.....	55
Cleaning a Grindstone.....	55
Cooled Water with Service.....	55
Directory of Refrigeration Services Invites Your Registration.....	56
Cleveland Prepares for 10th Annual RSES Convention	57
Exhibit your Service Truck at Convention.....	60
Registration Information for Convention.....	62
All Industry Exposition to Offer Many Features.....	64
RSES News and Activities:	
Mrs. Clyde Copp Passes Away.....	68
Illinois 10th Convention.....	68
New England States 3rd Convention.....	72
Orange County Picnic.....	76
Maritime Chapters Joint Meeting.....	78
Chapter Notes.....	78
California Committee Lays Plans for Conference...	82
New and Improved Equipment.....	88
News of the Equipment Industry.....	92
Volume Index.....	110

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## IN THIS ISSUE

**A**S WE draw near to the end of another year and begin planning for the next, it may be helpful to revise our perspective of the industry we serve. Such revisions are necessary occasionally to pick us up from the rut we have fallen in—to raise our sights to the future level of our industry so that our personal future may keep pace. The article on page 31, "Refrigeration—A Basic National Necessity in Peace or War," paints an interesting over-all picture of our industry of today and the future.

**A** PICTURE story on page 34 shows a few ways in which a new motor driven tool on the market can help speed up refrigeration installation and service work.

**T**HE article by John M. Schlemmer on page 36, "De-Mystifying Superheat," describes with simple comparisons the meaning of superheat, then continues with an explanation of how and when the external equalizer of an expansion valve should be used.

**A** WEST coast wholesaler has just completed modernizing both his headquarters and his system of cataloging and storing his stock of parts and supplies. His catalog numbering, storage bin arrangement and perpetual inventory system offer many helpful suggestions to anyone with a large enough parts inventory to present a problem. Read about it on page 38.

**I**N HIS article "Take the Guess Out of Estimating" by Donald F. Daly, appearing on page 41, the subject of monthly inspection contract service is discussed. According to the opinion of the author, this is the best type of service contract to offer the customer. However, future articles in this series will discuss other types of contracts.

**T**HE city of Miami, Florida, is working on a licensing ordinance for refrigeration contractors and servicemen. The provisions of this proposed form, appearing on page 47, may be helpful to those who are considering such ordinances in their own locality.

**Q**UESTIONS and Answers department this month, appearing on page 52, contains a problem on industrial water cooling and one on fur storage.

**O**NE of the Service Pointers appearing on page 54, offers a suggestion on how much a year's guarantee is worth on rebuilt refrigerators. Perhaps you have wondered.

**P**LANS and expectations of the 10th Annual R.S.E.S. Convention and the All-Industry Exposition are outlined beginning on page 57. More explicit information will follow in the January issue.

### COVER

**O**UR front cover this month shows employees of the F. A. George Company installing part of the air conditioning equipment being used to cool the sales floor and offices of the company.

The F. A. George Company, a full-fledged Frigidaire dealer, employs 22 servicemen and 3 salesmen. The company owns its own building at the corner of 18th Street and Adams, Cleveland, Ohio, and as a part of an expanding sales program, Mr. George is installing air conditioning throughout the display room and various offices.

In addition to sales, the company has one of the largest service organizations in Northwest Ohio.

### PARDON THE ERROR

**I**N DESCRIBING our November front cover we stated "the two temperature valves—are Automatic Products." It has been drawn to our attention that these valves shown in the front cover picture are Alco Valve Co. Type 760 Evapontrol regulators.

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# Refrigeration—A Basic

## National Necessity in Peace and War

By WILLIAM B. HENDERSON\*

**R**EFRIGERATION is a basic necessity in today's world. It ranks almost with steel, petroleum, rubber, cotton, and chemical products as a pillar of our national economy. Hundreds of American industries are dependent on refrigeration (and its junior partner, air conditioning) for the production of thousands of items of daily use. Refrigeration touches the lives of each American, and many people of the world, each day and in many ways.

Refrigeration is a working wheelhorse in the national industrial team, but so quietly and efficiently does it pull its share of the nation's load that for the past half-century it has been taken as much for granted as the air we breathe or the water we drink. In times of national and world crisis, the headlines may scream about metals, rubber, petroleum, food, and other vital necessities, but refrigeration, if mentioned at all, usually is accorded but a small and passing footnote. Overlooked is the fact that, without refrigeration, only a minute fraction of our nation's enormous food output could move more than a few miles from the producing farm through the devious distribution and processing channels to the ultimate consumer. Synthetic rubber and the processing of petroleum products rely on refrigeration. Thousands of chemical and pharmaceutical products must have controlled temperature and humidity conditions as they move through the various phases of their manufacture. Mining and metal working, automobiles and airplanes, paper-making and printing, transportation and communication equipment, textiles and photographic materials, precision instruments and electronic equipment—these are only a few of the broad industry classifications dependent, in varying degrees, on refrigeration and air conditioning. Dependent, too, is the vast

army of users of refrigeration and air conditioning in homes, stores, office and commercial buildings, hospitals, laboratories, banks, restaurants, hotels, and other places. Refrigeration and air conditioning are intimately interwoven with almost every phase of today's way of life.

Here is an overall view of the present and future magnitude of our refrigeration and air conditioning industry which should make those of us engaged in it proud of the part we play. Our place in the national economy is one to be envied and because we are such a young member of the great industries of our nation, we have every prospect of growing to a place of even greater prominence.

We see mass migration of peoples and industries, affecting large areas of our country, made possible through the use of refrigeration and air conditioning. The movement of industry and people from the crowded industrial areas of the North to the spacious areas and kindlier climates of the South is profoundly affecting our national industrial and political economy and, directly or indirectly, the lives of all of us. A new industrial, agricultural, and social empire is being built below the Mason and Dixon line. One reads the almost daily appeals of Northern Chambers of Commerce, desperately trying to induce industries to stay in the North. To the Northerner, this mass migration to the vast reservoirs of natural resources and productive manpower of the South is a grim reality of economic evolution. It is not illogical to assume that a quarter of a century from now we may find that the balance of industrial and eco-

\*Executive Vice President, Air Conditioning and Refrigerating Machinery Association, Inc. In an address before The American Society of Refrigerating Engineers, Newark, New Jersey.



conomic power has slipped from the Northeastern states to the Southern states. In all this economic, political, and social realignment, refrigeration and air conditioning are playing and will play a leading role.

As a result of the development of atomic power, the United States and the world face a future fraught with both great promise and ominous threat. In this new development, too, refrigeration and air conditioning constitute an irreplaceable pillar in the national and world structure. Atomic fission produces tremendous heat. That heat can be controlled only through the employment of large volumes of cooling. In the development of the Manhattan Project during the war, refrigerating equipment of capacities never before dreamed of in the refrigeration and air conditioning industry was designed, manufactured, and installed under the lash of wartime necessity. The Hanford, Washington, atomic development pile alone required an installation of 12,000 tons of refrigeration, twice as big as the largest pre-war installation. For each installation of atomic power for peacetime use in the future, there will be a corresponding need for refrigeration.

### Refrigeration in Defense

Widespread preparations are now being made by our government to ready defenses should the United States be attacked by an enemy employing atomic, bacterial, or other awesome weapons now in existence and, indeed, in some measure of production. We know the United States will never be the aggressor. We probably won't know we are engaged in the next war until we have been struck a quick, unheralded, and devastating blow laying waste our cities and killing hundreds of thousands of our people. Obviously we must guard, and so distribute, our strength that we may be in a position to launch a shattering counter-attack on such an aggressor. Essential supplies must be stored in widely-separated bomb-proof and radioactive-proof shelters. Key industrial plants must be dispersed and similarly protected. Adequate shelters must be provided for both military and civilian personnel. Our Navy must learn to live and fight in sealed hulls protected from deadly radioactive rays. Our Army must be largely airborne, carrying food supplies adequate for extended periods and equipped with a multitude of lightweight fighting and maintenance gear. All this may sound like "scare-heading" to a nation sick of war and

all its terrible consequences. However, not to prepare for such a real possibility would be to invite disaster. By demonstrating that the United States is prepared and strong and in a position to deal deadly retaliation, we may deter a potential aggressor, and possibly avoid disaster until the nations of the world learn to live together in interdependent harmony.

In our nation's preparations for possible future hostilities, refrigeration and air conditioning assume their traditional role of vital essentials. In a future wartime emergency, factories would have to operate, and people would have to live, in subterranean spaces. Food and other materials would have to be stored and preserved and the air in the enclosed spaces kept free of all kinds of contamination. That quick glance into the future, disturbing though it may be, again demonstrates the large responsibility our industry has to the nation. We must not lag in the constant effort to design and produce the best and most efficient refrigerating and air conditioning equipment possible, and we must be prepared to produce it in large quantity.

### Foreign Demand

The last war greatly spurred the demand for refrigerating and air conditioning equipment throughout the world. Far-traveling American fighting men took with them their own refrigerating and air conditioning equipment. People in far-off lands saw its beneficial results in food handling and its use in hospitals, in living quarters, in material storage and other applications. Since the war, the orders our industry has been receiving for export have been tremendous. Because of the demands of our home markets, material shortages, the lack of dollar exchange, and export controls, it has been possible to fill only a small portion of the orders from overseas markets. In the first six months of 1947, shipments of refrigerating and air conditioning products were valued at 32 million dollars, but the backlog of foreign demand is probably thirty times that figure. It shows no indication of diminishing in the foreseeable future.

The requirements of our home markets are substantial, but gradually production is cutting into the huge replacement and new-equipment demand resulting from four years of equipment-starvation. The production personnel of our industry has wrought miracles in the face of material shortages, labor troubles, and reconversion headaches. But

the war brought our industry one stroke of good fortune—productive facilities have almost doubled, so that we are in a better position to meet the heavy calls for industrial and commercial refrigerating and air conditioning machinery. The industry sales curve has surged to a new high point in terms of dollars. In the year 1947, sales of refrigerating and air conditioning equipment, excluding accessories and collateral items, such as storage boxes, soda fountains, liquid coolers, etc., and of course, household refrigerators (a very large item, running into hundreds of millions of dollars), will approximate \$250,000,000 of factory billings. Shipments of comparable equipment in 1940 were valued at \$55,000,000—thus there has been an increase of 450%. However, you and I know that the 1947 dollar is but a pale reflection of its 1940 counterpart. Therefore, to appraise this large increase in sales in proper perspective, we use, as an adjustment factor, the Bureau of Labor Statistics index of wholesale prices for the metal and metal products group. Using that means, we find that the actual increase in dollar sales, 1947 over 1940, is 178%. Given normal material supply and production conditions in 1947, the unit sales volume could easily have been tripled.

### Growing Demands

The demand comes from all fields. For example, in a recent survey the hotel industry indicated a current need, in existing hotels, for new and replacement refrigerating and air conditioning equipment amounting to approximately 90 million dollars. Most industrial and commercial construction, now under way or contemplated, is planned for the installation of air conditioning either at the time of building or later. The owners of many existing buildings are planning the installation of air conditioning. The cost of producing and installing refrigerating and air conditioning equipment has advanced 40% to 60% over 1941, while selling prices have increased only slightly over 25% on the average.

There is nothing static about the refrigeration and air conditioning industry. As one example: There is a substantial trend both in existing buildings, and also in planned new construction, toward the use of banks of self-contained unit air conditioners, functioning automatically in series, instead of the conventional central-station installation. In many instances, such an arrangement affects

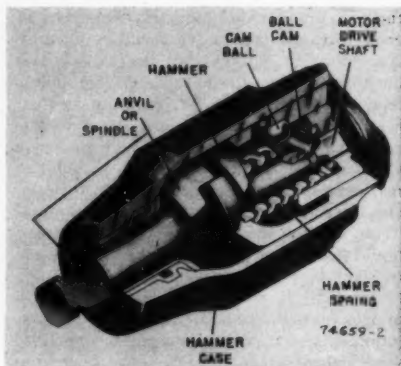
important economies of both installation and operation. There is an increasingly-growing demand for and use of completely factory-assembled "self-contained" air conditioners. These now range in size from one-half horsepower up to twenty-five horsepower. It is probable that that trend will extend to ever-higher capacities.

New equipment designs and refinements are moving out of the research and development laboratories of the industry to the production lines. Compressors are commonly operating at speeds in the neighborhood of 1750 rpm, and some up to 3500 rpm, yet it is only a few years back that compressor speeds of 1000 rpm were viewed with something akin to skepticism mixed with some alarm. Lightweight compressor bodies of tough new alloys are replacing former bulky, heavy materials. We hear whispers of new, more efficient refrigerants being developed which may replace the old reliables of the past. New methods of air distribution, odor control, and the removal of foreign matter from the conditioned air, will probably be announced before long.

The modern development of an old principle, the "heat pump" or "reverse-cycle refrigeration," is being watched with keen interest. As you know, the heat pump is simply a device for pumping heat from a low-temperature level to a high-temperature level. When applied to the heating of dwellings, the heat pump withdraws heat from some low-temperature source of supply, such as the outside air, well water, or the ground, and delivers this heat to the inside of the dwelling. The largest potential market for the heat pump is residences, where it must compete with existing and more conventional methods of heating and cooling. Opinion in the industry appears to be about equally divided as to whether the heat pump will be a large-scale commercial success or a sorry disappointment to its proponents.

As I have outlined, the future is full of stimulating challenge for the industry, but I wonder whether some of us haven't let our working tools get a bit rusty, whether we aren't in a species of rut, or whether, at times, we aren't afflicted with a sort of post-war inertia. Have we forgotten how to sell? Production is catching up with demand and the day of the heavy-seated order-taker is rapidly coming to a close. The day is not far off when the sales and distribution field of our industry will again be charged with the responsibility of keeping demand up to the level of production.





This is the impact unit of the new Ingersoll-Rand tool. For the sake of clarity, the electric motor which drives the unit is not shown. The impact unit is housed by the hammer case.

## New Impact Tool Speeds-up Installation and Service

REFRIGERATION service men are today beginning to feel the effects of the rapid growth of the refrigeration industry. Like the fairy tale beanstalk it has shot up almost overnight. Among the factors contributing to its growth are rural electrification, new and improved refrigeration equipment, and increased consumer demand for fresh and frozen foods.

Locker plants have grown sensationally. In 1935 there were 250 locker plants in the United States. Now there are 8,870. More than 2½ million household refrigerators have been sold since 1946. Today the refrigeration and air conditioning industry is a 2 billion dollar a year business.

For refrigeration maintenance men, this expansion of the industry means increased calls for service and repairs. There are now more units to be fixed, and less time in which to do the job. Service shops report a steadily growing repair business. New installation work keeps coming in. The load piles up.

To lighten the work load on both installation and repair work, a new electric impact tool, just put on the market by Ingersoll-Rand, has been found to cut time as much as 90% on nut-running operations, and to have a variety of other applications in the refrigeration field. Because it may be used with numerous attachments, the installation or repair man can use it as an all-purpose tool. It can be plugged into any electric socket, and put on the job in the shop, or taken out into the field. Illustrated are some of its refrigeration applications, where it is especially useful for nut-running, drilling, and tapping.

Its range of performance covers operations usually requiring four separate tools. With standard attachments, the new tool will drill steel, wood, or masonry, apply and remove nuts, drive and remove screws, ream, tap, drive and remove studs, extract broken cap screws and studs, and run wire brushes. The manufacturers state that the tool handles easily the removal of frozen nuts, up to ½" thread size, which ordinarily would have to be cut or burned away.

The six pictures in the outer columns of these two pages show a few uses the new Ingersoll-Rand Impact Tool can be put to. They are:

(1)—Drilling a  $\frac{3}{8}$ " hole to hold down the bracket on the refrigeration unit being installed on a refrigeration truck. On this job the tool worked as any electric drill until the end, when the impact mechanism gave it the extra power needed to push through. For a second, before going through, the spindle stalled, but the motor continued to run.

(2)—Another workman uses the tool to run up a  $\frac{3}{4}$ " lag screw for a shelf support. He pulled off the collet-type chuck and drill, and snapped on a socket wrench for the job.

(3)—By turning the cap at the end of the tool and reversing the motor, the  $\frac{9}{16}$ " nut is easily run off the flywheel of this compressor. It's just as easily run on again when the repair job is finished.

(4)—There, with a socket wrench attachment, the tool loosens up the  $\frac{1}{2}$ " head bolts so the operator can remove the valve plate and head from the compressor body and repair the head. The 8 bolts were loosened and removed in approximately  $1\frac{1}{2}$  minutes.

(5)—Removing  $\frac{3}{4}$ " nuts from the cylinder head to repair the compressor of this 3-ton Chrysler package air conditioning unit is only a matter of seconds. This type unit is chiefly for commercial use in stores and offices.

(6)—Tapping is a familiar operation to refrigeration men, and a natural operation for this reversible impact tool. The popular range of sizes from  $\frac{1}{4}$ " to  $\frac{1}{2}$ " is easily handled, and, with the motor reversed the tap can be backed out without any trouble. Stripped threads on the compressor body are being repaired here.

The new machine, known as the size 4U, weighs only 6  $\frac{1}{2}$  pounds, has an overall length of 10  $\frac{1}{2}$  inches, a free speed of 2000 r.p.m., and is powered with a specially designed reversible motor drawing 3 amperes. It operates on 110 volt AC-DC current. The motor can be reversed merely by turning a cap on the end of the tool.

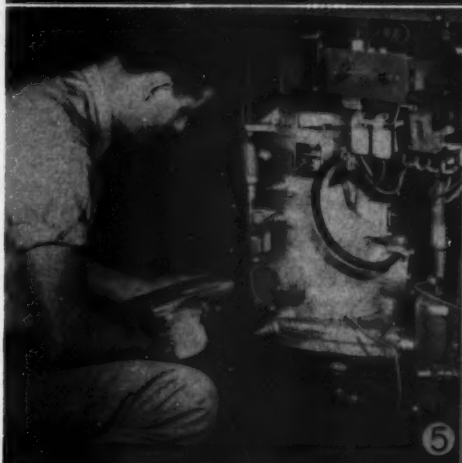
Because of its light weight and good balance, the tool is easy to hold and use. No kick or twist is transmitted back to the hand under any condition.

Here's how it works. The impact tool runs just as any conventional electric tool until the going gets tough. When the resistance to spindle rotation reaches a certain amount, the impact principle starts to work automatically.

With the jaws of the hammer and anvil in contact, as shown in the illustration, the ball cam, hammer, and anvil, which can be called the spindle, rotate as a unit and the impact tool performs just as any conventional electric drill.

When the resistance on the anvil is greater than the initial pressure of the hammer spring, the anvil remains stationary and the rotation of the ball cam causes the cam balls to roll up the cam grooves, pulling the hammer back over the ball cam and compressing the hammer spring. When the hammer is drawn back far enough, the jaws of the anvil and hammer disengage and the hammer jaws slip over the top of the anvil jaws. The power stored in the compressed hammer spring now pushes the hammer forward toward its original position with respect to the ball cam. As the cam balls reach the lower part in the cam track, the hammer has attained maximum acceleration and the hammer jaws deliver a powerful "rotary" impact to the anvil jaws.

1900 rotary impacts per minute provide the performance of this new electric tool. The principle of compressing a rugged hammer spring and suddenly releasing this energy to strike a rotary blow results in greater turning effort than any other known method.



# An Explanation of Superheat and the External Equalizer

## "De-Mystifying" Superheat

By JOHN M. SCHLEMMER\*

**I**N SPITE of the many published articles and the many papers on the subject, the questions "What is superheat?" and "What is an external equalizer?" are asked many times in correspondence and in meetings which leads to the belief that there are many who do not understand these terms in relation to the operation of a thermostatic expansion valve. It is with the purpose of illustrating the meaning of superheat and the function of an external equalizer that this article is written.

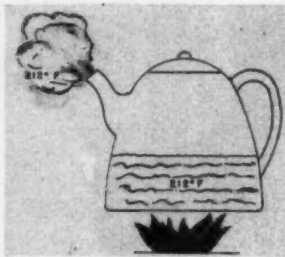


Fig. 1.

Fig. 1 is a tea kettle with water boiling at no pressure over a flame. At sea level, temperature is 212°F. As this water boils, it changes its state from water to steam, and the steam leaves the spout of the tea kettle at 212°F, the same temperature as the boiling water. If more heat is added to the water, it will not change the temperature of the water, but simply boil it off faster, and we will still have 212°F steam coming out of the spout. For every pound of water that is boiled off, a certain amount of heat has been used in doing this work.

In Fig. 2, is the same tea kettle with the water boiling under the same conditions, and the steam coming out the spout at a higher temperature than in Fig. 1, since we have applied a torch flame to the spout and heated the steam as it passes through the spout. The amount of heat added to the vapor is superheat. The superheated steam

can be increased in temperature according to the amount of heat added to the spout.

Applying this theory to a refrigeration system, Fig. 3 shows liquid refrigerant entering the coil at 10°F. As the liquid flows along the coil, it is vaporized or boiled off by the heat surrounding the coil. The temperature of this liquid remains constant, as the water in the tea kettle did. However, the vapor that boils off is superheated by the surrounding air to a temperature several degrees higher than the vaporizing tempera-

ture. This superheated vapor creates a pressure in the bulb of the expansion valve which is clamped at the outlet of the coil. The amount of superheat picked up by this vapor is controlled by the expansion valve bulb opening or closing the valve. If the vapor is allowed to remain in the coil a longer

period of time, it will increase its temperature. The desired amount of superheat in most cases is 10°F; therefore, most expansion valves are set at the factory for 10°F superheat rise. This simply means that the

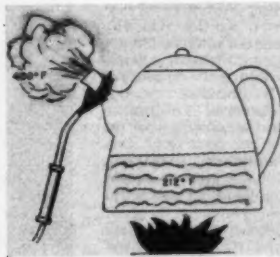


Fig. 2.

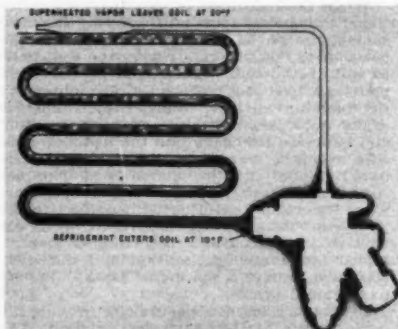


Fig. 3.

\*General Controls Co., Glendale, Calif.

superheated vapor leaving the evaporator will be 10°F warmer than the liquid refrigerant entering the evaporator at the same pressure.

"Freon 12" boils under no pressure at minus 21.7°F. This means that if the Freon were placed in an open container in a compartment, the same as ice was placed in the compartment, the Freon would evaporate or boil, and have a temperature of minus 21.7°F. Therefore, it would refrigerate the compartment until all of the liquid was boiled off. Then the refrigeration would cease.

A mechanical refrigeration system is simply a system consisting of a space wherein the refrigerant can be released into a low pressure compartment and allowed to evaporate at a low back pressure, a compressor to compress the boiled off vapor, and a condenser to condense the vapor back into a liquid state.

Fig. 4 shows a complete refrigeration system, similar to Fig. 3, except that it has a different type expansion valve. This particular valve, instead of having a large opening leading directly from the outlet of the valve to the underside of the diaphragm, is constructed with a drilling and a selector valve, so that the pressure under the diaphragm flows through this drilling, making an internal equalized valve. If the selector valve is run in against the seat, the low side pressure in the evaporator cannot travel to the chamber under the diaphragm. The selector valve is drilled so that when the valve is in this position, the forces, to operate under the diaphragm, must come from the connection provided on the outside of the valve, making an external equalized valve. This connection is called the external equalizer connection, and is used when too

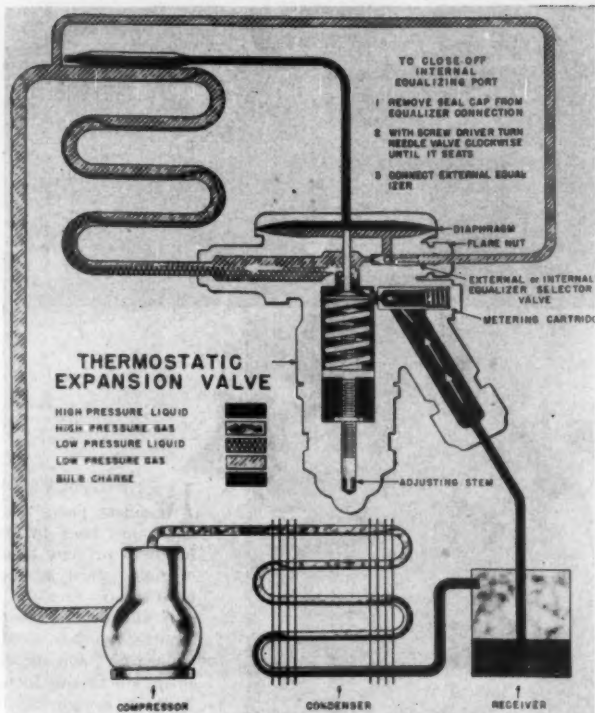


Fig. 4.

much pressure drop is found in the evaporator.

With this hook-up, we are getting the true crank case pressure immediately under the diaphragm to give us the proper operation of the valve. An external equalizer valve is used on large installations where there is a definite pressure drop through the coil, and an internal equalizer valve would not feed the coil with enough refrigerant, even though it was the properly sized valve. This would occur because too much pressure under the diaphragm would be opposing the bulb pressure, and the valve would remain closed and could not open until the feeler bulb became very much warmer than the normal operation. Since the only way superheat could be added to the vapor is by the vapor remaining in the coil longer and being subjected to more heat, we could naturally have a defrost condition on a large section at the outlet of the evaporator. To restore the normal operating valve, we connect the external equalizer.



Pictured on this page are: (1) The old parts counter before Refrigeration Service, Inc. began modernizing. (2) A section of the new stock bins installed during modernization. (3) The stockroom manager's office.



## West Coast WH Modernizes Q

**R**EFRIGERATION Service, Inc., the oldest parts wholesaler on the Pacific coast, has been in business since 1928, and in their present location since 1930. The original space in their building contained 6000 square feet and the parts counter was only about fifteen feet long. About eighteen months ago they obtained an additional 4000 square feet and so decided to redesign their entire stockroom, including bins and counter. The new design gave them 30 ft. of counter space as well as an adequate office for the use of the stockroom manager. In addition to improving the appearance of the stockroom, its redesign included the following three considerations: (1) A simple and logical parts numbering system for identifying parts; (2) An easy and rapid means of locating parts in the stockroom; (3) A simple method of inventory control.

Having used manufacturers' part number for many years with a multitude of troubles due to duplications of numbers, Refrigeration Service, Inc. decided to design their own numbering system. Experience drawn from other industries indicated that a number in which the sequence of digits was broken by a letter was easier to remember as well as copy, and so they evolved such a system. Their entire inventory was divided into eleven basic classifications, each so different that there would be little question in which classification any particular part should belong. Then eleven letters were picked (after eliminating all letters which could be confused with numbers), and assigned one to each basic classification. It



## Wholesaler Quarters

To improve the method of handling parts, all stock bins were replaced by those of new design. Each bin is 3 feet wide, 15 inches deep, and 7 feet high, with an additional 2 feet on top for reserve stock. A bin section contains 3 vertical rows of bins with shelf supports on 6" centers. Shelves are removable so that vertical space can be arranged to any multiple of 6". Eight com-

39



SUPPLIER  
**SCHULTZ TOOL & MACHINE**  
ORANGE CALIF.

REFURBISHMENT SERVICE INC.  
WILSON, CALIF. 92797

MATERIAL ORDERED			DATE	CASE	DATE
DATE	QTY. NO.	QTY.			
7/1/46	159	95	INVEN. BEGIN	7/1/46	87
7/1/46	231	200	RECEIVED	8/1/46	95
10/1/46	417	200	TOTAL		182
			SALES		142
			INVEN. BEGIN	10/1/46	40
			RECEIVED	10/1/46	200
			TOTAL		240
			SALES	10/1/46	221
			INVEN. BEGIN		19
			RECEIVED		
			TOTAL		
			SALES		

5

SHIP TO LOCATION \_\_\_\_\_ LIST \_\_\_\_\_

COST \_\_\_\_\_ NET 1.95 \_\_\_\_\_ INSP. PART NO. \_\_\_\_\_

QTY. NO. 1671 ITEM SCHULTZ SEAL RING PULLER



partment drawers, made to fit a 6" section, have removable dividers to provide small adjustable spaces. Bin sections are numbered vertically, beginning at top left, descending each of the three rows, and ending at bottom right. Such an arrangement makes it possible to change the spacing where necessary with the least possible moving of stock. There are no separate bin numbers—each bin space carrying the catalog number of the item which it contains. For this reason, care was used in originally assigning catalog numbers so that items could be stored as economically as possible, small parts for drawers being grouped together.

Catalog numbers do not run consecutively through the entire stockroom but bin sections or groups of bin sections are consecutive. By painting the bin number series on the ends of each aisle, specific catalog numbers are easily and quickly located. The catalog numbers are added to incoming orders which do not have them and thus it is easy for a comparatively inexperienced person to fill orders quickly and correctly. This was not possible before.

### Inventory Control

For inventory control, this company uses a simplified form of perpetual inventory card, a sample of which is shown. When an order is placed, the remaining stock is counted and the figure becomes the beginning inventory. Orders are entered in the left hand column and when received the quantity is noted under "received" and a total entered below. When the next order is placed, the beginning inventory is noted at the top of the section below and when this figure is subtracted from the total just above it, the remainder is entered under "sales" and represents the sales for the period between orders. Turnover figures can then be accumulated from these "sales" figures to be used to determine maximum and minimum stock. A Wheeldex unit is used for this inventory card file which speeds up the work of making entries. Cards are filed by catalog number rather than alphabetically in order to avoid confusion and difficulty with nomenclature.

The last, and a very important link in this system, is a master file of all the manufacturers' catalog. Opposite each item carried by the company, their own catalog number is shown, making it possible to ob-

tain their own number when only the manufacturer's number is given.

In connection with this inventory control system, the company is now working on a method which will automatically detect shortages in stock, so that quantities can be held accurately within the maximum-minimum limits set for each item, although this part of the control system is yet too incomplete to be described at the present time.

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### CALIFORNIA SERVICEMEN BECOME BUYERS OF TRADE-INS

By BERT MERRILL

ANTICIPATING the time when trade-ins will be a normal part of every new-refrigerator sale, Roy Somers, of Somers Appliance Company, Sherman Oaks, Calif., is making a determined drive to acquire good, serviceable trade-in refrigerators at present.

"The trade-in market has actually been slow," Somers pointed out, "only a few junk boxes not worth reconditioning being encountered. People apparently are hanging on to their good refrigerators, waiting until prices go down, or new equipment is available. However, we have found a great demand for good, serviceable rebuilt refrigerators among new families moving into the San Fernando Valley, and think that by selling them a worthwhile rebuilt box, we can be sure of their new-appliance business later on."

With two service men out making refrigeration repair calls, Somers has transformed both into buyers. While giving courteous service when called, each man makes a policy of asking the housewife whether she is willing to sell her box, either outright or on a new refrigerator purchase. If the customer will do so, the box is quickly reconditioned, and placed on display at the front of the store. Few ever remain for more than one day.

The high cost of repairing sealed-unit refrigerators will be a considerable factor in used refrigerator rebuilding in the future, according to Somers. He estimates the cost of fixing any such sealed-unit refrigerator at about \$85—which, of course, means that the box would have to sell for more than \$100. "Meanwhile we can use all of the standard compressor type boxes we can obtain—as the basis for building up immediate good-will, and new appliance sales later on."





## TAKE THE GUESS ?? OUT OF ESTIMATING ??

By DONALD F. DALY

### MONTHLY COMMERCIAL CONTRACTS

THERE is another angle of contract service that has been used by service organizations for many years and it is just as good today as when it was first worked out. That is, contracting with markets, butcher shops, creameries, apartment houses, and other commercial users, to do their service and maintenance work on a monthly basis.

The idea is to sign up such stores and shops for a monthly inspection service at so much per unit per month. In most cases the fee received for this inspection service does not, in its self, make you very much money, but it does give you an "in" with the owners of refrigeration equipment. Once you have this "in," if you can prove to them that you have their interests in mind, you will have first call on all overhaul work and a very good chance to sell them any new or replacement equipment they might require.

The secret of success in this type of contract service is to make the owner feel that you are essential to his business. It may take a little time to bring this about, but if you conduct your dealings in such a way that the owners come to you for advice on all things pertaining to their refrigeration equipment, you are in. And that is just what you entered into this sort of an arrangement for—to get an "in." But it won't do you any good to have this "in" if you don't take full advantage of your opportunity.

I believe, that once again, the best way to illustrate how such an arrangement works out is to take a typical example and show the events leading up to it, and what developed out of it. To get this information I went to a man who has had much experience in this line. Dell Carman is the sort of refrigeration service engineer most of us would like to be, but probably never will. In the past twenty years Dell has worked on just about everything in refrigeration service from a four foot domestic box to a six hundred ton industrial plant.

The experiences related in this particular story took place in the 1938-1941 period. At that time Dell was service

manager for a large organization in Salt Lake City, Utah. It was a well organized outfit and they prided themselves on giving first class service. However, in common with all service organizations, they found that they had a peak period for service work which lasted for about seven months of the year. The remaining five months were very slack and frequently necessitated laying off men it had cost them time and money to train.

#### *Ninth Article*

Contracting with owners of commercial equipment for monthly inspection of their equipment may not be a money maker in itself but if your services prove valuable to the owner, such contracts can become real business builders.

With the idea in mind of trying to eliminate this slack season Dell set out to line up a few stores and markets on a contract service basis. He had no previous experience along this line, but got the idea from an article he read in THE REFRIGERATION SERVICE ENGINEER. The editors of this magazine had long been advocating that service shop operators turn to some such methods to help iron out the downward dips that appear on the charts of all service organizations during the winter months.

The first owner Dell signed to such a contract had a lot of equipment. He operated seven large markets and five bakeries. Each bakery had a 1 hp. condensing unit for their large reach-in box. Each market from one to three commercial units, ranging in size from 1½ hp. to 3 hp., and from five to seven self-contained units such as frozen food boxes, ice cream cabinets, reach-in boxes, etc., for a total of eighty pieces of equipment in the twelve establishments.

The contract was very simple. Dell's outfit agreed to make a monthly inspection of each and every piece of equipment, to oil the motors, clean the condensers,

# REFRIGERATION MAINTENANCE CO.

Denver, Colorado

## SERVICE CONTRACT

This agreement made and entered into at \_\_\_\_\_ by and between the Refrigeration Maintenance Co. of Denver, Colo., hereinafter designated as the company, first party, and \_\_\_\_\_ of \_\_\_\_\_ hereinafter designated as the owner, second party.

That the company in consideration of an annual fee of \$ \_\_\_\_\_ to be paid each year by the owner as follows: \$ \_\_\_\_\_ cash in hand, the receipt whereof is hereby acknowledged, and the balance of \$ \_\_\_\_\_ to be paid in equal bi-monthly instalments beginning \_\_\_\_\_, agrees to perform the following services, to-wit:

To inspect and adjust the operating mechanism of the \_\_\_\_\_ refrigeration systems belonging to the owner every two months by performing the following services, to-wit: inspect and clean equipment; oil motors thoroughly and change oil at least once a year in compressors; check all valves, operating pressures, water lines, tighten bearings, belts, clean condensers; check for bad pistons or rings; remove carbon or air from systems; clean strainers; check settings of expansion valves; circulation of air in coolers, baffles, hardware, door seal on cases and coolers; clean, check, and replace brushes and clean commutator on electric motors.

All electric motor repairs such as rewinding or replacement of parts shall be charged for additionally, but the first party agrees to remove motor and furnish a rental motor free of charge during period the motor is undergoing repair. The first party shall not be liable for motor trouble caused by burn-outs due to overloads, improper fusing, open circuits, shorts, or bad bearings, or low voltage. Any authorized changes made resulting from improper wiring will be charged for additionally.

The first party agrees to perform all the above labor services during the life of this contract for the regular service payment as above quoted without an extra charge, except as above, and for all repair parts, oil, refrigerant, or other materials only; used in the maintenance of said refrigeration system and the first party shall not be held responsible for the repair of any refrigeration unit disabled from outside causes, accidents, explosions, or from tampering or from any other than the natural wear and tear resulting from the ordinary and usual use of said refrigeration unit. The said owner hereby agrees to pay for extraordinary services, required because of accidents or other unusual causes and for materials or parts used on such work at the regular rate in addition to the amount hereinbefore expressed, for inspection and maintenance service.

The company agrees to service refrigeration units at any time between the regular bi-monthly inspection periods upon reasonable notice and if the cause of the breakdown was from the natural and ordinary use of the unit and not from tampering or other causes as above expressed, the company shall make no extra charge for said special service call.

The company agrees to provide a check call number to verify each service call for the owner's protection. If the company refuses or neglects to provide the aforesaid service within five hours after being notified, the owner shall hire the work done and the company shall pay the cost thereof and be released from any claim for spoilage or other losses.

All servicing and repairing shall be performed according to the standard practices of the Refrigeration Service Engineers Society.

The company agrees to maintain charts showing the condition found upon any inspection and provide the owner with a duplicate copy thereof and the owner agrees to sign duplicate of said charts which will be kept in company files for reference.

It is understood and agreed that the above bi-monthly payments shall be payment in full for all services rendered by the company except the payment of parts and except for any repairs caused by accident or acts out of ordinary usage of the machinery.

In consideration of the faithful performance of this contract by both parties hereto for the term hereof, the parties agree that this contract shall continue for another term and upon the performance of any service by the company after the term hereof, it shall bind both parties to a renewal hereof unless abrogated by written notice delivered by registered mail.

IN WITNESS WHEREOF we hereunto set our hands this \_\_\_\_\_ day of \_\_\_\_\_, 19 \_\_\_\_\_  
REFRIGERATION MAINTENANCE CO.

By \_\_\_\_\_

Witnesses: \_\_\_\_\_

Owner

By \_\_\_\_\_

Type of contract form used by a Denver firm for inspection and maintenance service. It is this type of contract which can so easily be misinterpreted, leading to unhappy relations.

and keep the units clean. For doing this they were to receive one hour's pay each month for each store or bakery. Their charge rate at that time was \$2.25 per hour. Since there were twelve stores involved, this meant a cash income each month of at least \$27.00. In addition to this income they were to supply any or all material that might be required to make repairs, at the list price for such material. Any additional labor that might be needed to install the parts and material, was to be paid for at the usual hourly rate of \$2.25. They were also to have a chance to bid on any new or replacement equipment that might be needed.

Dell took personal charge of this con-

tract and decided to give it a good trial before taking on any more such work. He felt, being a conscientious guy, that he would have to give his client the best possible service if he wanted to gain his confidence. For this reason he devoted more time and attention to this account for the first couple of months than the owner paid for. However, this did not involve much loss as they did the work at odd times when one of their mechanics happened to be in the neighborhood of one of these stores and had an hour or two to put in to finish out his day. But it did mean that the owner was getting more than he was paying for, and that was exactly the impression they were trying to convey.

The first step was to clean all the units, oil the motors, clean the condensers, and paint the motors and unit bases. They carried a gallon or two of paint with them at all times, and as time would allow they painted all of the unit bases and motors. It doesn't take much time to put a coat of paint on a unit, and it surely does improve its appearance. Then too, once the units are cleaned and painted, it takes much less time to make the monthly inspection.

Most of this owner's units were in pretty fair condition, so there wasn't too much cleaning to be done. But as they went over the equipment the first time they made a careful inspection and entered the findings of this inspection on a record card. Any repairs that were of an emergency nature would be done at once. Subject, of course, to the approval of the owner. But any repairs that were not of an emergency nature, such as bent door latches, gaskets, imperfect controls, small leaks, and so on, were noted in detail on a monthly report that was sent to the owner with recommendations that the work be done, and an estimate of the approximate cost of such work.

### Reports Result in Work

"These reports were well received by the owner," said Dell, "and in most cases the recommended work was done. This extra work more than repaid us for the extra attention we gave the equipment during the first couple of months. In the first year under this contract we had more than \$300.00 in casual repairs.

"In addition to the casual repairs," Dell went on, "we sold several replacement units. One of the markets had a 3 hp. unit on the display cases and walk-in boxes. It wasn't large enough to carry the load. We split the load and installed a new 1½ hp. unit. We sold another 1½ hp. unit for another store to take care of some new display cases that were added. We did not get the sale on the display cases. We also sold three ½ hp. units to replace worn out equipment, and one new starter switch for a 3 hp. unit.

"The total amount brought in for labor and material for the first year under this contract was in excess of \$1500.00," Dell continued. "In all probability we would not have gotten any of this work if we had not had the owner under contract. It is probably true that the second year would not bring in as much business as we had in the first year. However, the casual repairs would hold about the same. There is so much wear and tear that has to be taken care of all the time. We also found that the refrigeration requirements for markets and bakeries change from

month to month as new lines of merchandise are added. This frequently means new equipment.

"The owner was very well satisfied with the arrangement," said Dell. "He found that having all his service work done by one reliable outfit was to his advantage. If something went wrong he knew exactly where to place the responsibility. He also told us that we had saved him a lot of money for motor repairs. Before we started making monthly inspections he had a lot of motor failures because no one had been oiling the motors. In the first year under this contract we did not have a single motor failure. Of course, the motor failures in the past had not all been due to not oiling the motors. In many instances it must have been due to some condition in the refrigeration equipment. But, with regular inspection of the units, we always found the trouble before the motor was damaged. In my opinion this point of regular oiling of the motor is one of the strongest arguments a service organization can put up in trying to line up contract service.

"We soon found," Dell continued, "that the only man who knew much about the refrigeration was the butcher, rather than the purchasing agent, who authorized the work, or the store manager. The secret of success in this particular type of work is to please the butcher. He knows what he wants, and you must give him just that. Different butchers have different ideas about what temperature the display cases and walk-in boxes should be held at. They don't pay much attention to a thermometer, but they do know when the meat is working to their satisfaction.

### Satisfy the Butcher

"Never argue temperature with a butcher. If he wants his display cases colder—you want them colder. If he wants them warmer—you want them warmer, and to Hell with what the book says. He's the guy who is going to call you in case of trouble. If you give him an argument he is apt to call some other service outfit, or put in a kick at the head office. In almost every case you will find that the butcher is right. If it should happen that he is on the wrong track you can suggest that something else be tried, but don't argue with him."

When this first contract brought such good results, Dell went after more such contracts. Not all of them worked out as well as the first one, but on the whole this type of contract served this organization very well, and proved to be the best door opener they had ever used. Of course, once you are "in" it is up to you.

It is no hit and run proposition. You will, if you give satisfactory service, be doing business with the same people for years on end. Therefore, it is essential that you enter into such work with the firm conviction that you are going to follow through, and that you are going to give your contract service accounts the best possible service at the lowest price that will allow you to show a reasonable profit.

It would not be advisable to go out and sign up equipment owners at random for contract service. Not unless you have an understanding that you are to put the plant into good operating condition before the contract goes into effect. A lot of refrigeration equipment in stores and markets is on its last legs. If you have to hit the owner with a lot of repair bills the first month or two, he is apt to call in someone else. Which means that you will, perhaps without justification, get a bad name and lose all of the work you put in to line up the account.

### Choose Contracts Carefully

Dell found that it was wise to be selective in lining up new service contracts. If his outfit had been doing the service work in a certain store or market, and had made major repairs or found the equipment to be in fair condition, they then approached that owner with a proposition to take care of his plant on a monthly basis. As is the case with all service work, it takes a little time to gain the confidence of the owner and to educate him to appreciate good service. All of which tends to prove that contract service of this type is a long range affair. If you don't plan on staying in business, or are not prepared to give honest and reliable service, you might as well skip it.

When they found this method so effective in increasing the business of the service department, Dell went out for other work that would tend to iron out the downward dip in the service work during the winter months. This organization had the agency for Kelvinator commercial equipment and they put on an intensive campaign to line up owners of Kelvinator equipment. To reach these owners they put on a direct mail advertising campaign to try to convince these owners that they should have their plants overhauled during the winter months.

This mail campaign was followed up by personal contact and very good results were obtained. Although they did not, apparently, get much results from the letters and circulars they sent out, they found that when they called on these people that some of the ground work had been done, and that people were willing

to listen to their pitch. They also found that a mail campaign, if it isn't followed up by personal contact, is not too effective. At least the results were not immediately perceptible. Of course, this advertising probably had some cumulative effect that would show up at a later date. Advertising men will argue until doomsday about the cumulative effect of any form of advertising. They're probably right, too.

The most gratifying results obtained from this direct mail and personal contact advertising campaign, and the most profitable in producing work for the off season, was the advertising directed at the owners of apartment houses. Part of this business came from individual owners, but the largest share came from banks, investment houses, and realtors. These institutions frequently own, or have the management of, a great many apartment houses. It is always better to direct your efforts toward an outfit which has the management of several apartment houses, than to an individual owner. Not that the individual owner should be overlooked. On the contrary, many of them will be your best customers. However, it takes the same amount of effort to line up a man with ten apartment houses as it does to sell a man with one apartment house.

### Records Show Best Contracts

"As we gained in experience," said Dell, "we learned what type of contract service was making money for us, and what kind was not so profitable. After the first year we concentrated our efforts mostly on markets, butcher shops, and apartment houses. The apartment house work was a great thing in the winter months when the plants could be shut down for a few days without inconveniencing the tenants too much.

"We worked out a routine for apartment house overhaul jobs that simplified it to a large extent. First we would arrange with the owner to have the plant down for a few days. When we were ready to start we would go out and attach a large refrigerant drum to the liquid outlet from the receiver. (Very few of these plants have enough pump-down capacity to hold the entire charge.) We would let the unit pump-down into this drum overnight. Usually, if the compressor was not too far gone, we would find the system down on a vacuum the next morning. In some instances, where the compressor would not pull a vacuum, we had to bring a pump-down unit from the shop to do the job.

"When the system was completely evacuated we would go through the apart-

ments and remove all the boilers. At that time we could get an exchange on low side floats at a very attractive price. If the plant had not been overhauled for two or three years we would try to sell the owner on the idea of exchanging all the floats. But if he wouldn't go for this, we would empty all of the oil out of the boilers, clean them up, and replace the old floats.

"While this was going on," Dell continued, "another mechanic would be overhauling the compressor and the motor. We would also replace any broken hardware or worn door gaskets. When the compressor was overhauled and all of the boilers were back in place, we would recharge and adjust the system. We guaranteed these jobs for one year, but we usually signed the owner up for a monthly call back to oil the motor and to keep the condenser clean. This was a very good deal from the owner's point of view. With a complete overhaul, such as we did, the owner had a refrigeration plant that was as good as the day it was first installed.

"Most of these jobs," said Dell, "were done on a time and material basis, but we would give a flat price if the owner insisted. The cost was not excessive either way. As a rule, three men could go through a forty unit apartment house in about five days. At our charge rate of \$2.25 per hour, this amounted to \$270.00 for labor. A rough average of \$5.00 per boiler would cover the cost of all material, including the motor and compressor work. That brought the cost for material to \$210.00, or a total of \$480.00 for the entire job. When you consider that this work had to be done only about once every three years, it figured out to cheap maintenance for the owner.

### Cost Fair to Owner

"Suppose we figure this cost over a three-year period," said Dell. "The overhaul job ran to \$480.00. Thirty-six months of check-up service, at \$2.25 per month, amounted to \$81.00, for a total cost of \$561.00 for service and inspection service for three years. The average cost per month would be about \$15.60. That's pretty cheap maintenance. On a hit and miss basis the cost of service over a three-year period would probably cost a lot more than that. Most apartment houses, when they install refrigeration, add at least five dollars per month to the rent for each apartment. They can easily afford to pay for good service, and most of them will do so. All they need is selling on the idea."

There is one very important thing about apartment house service—you have

to sell the owner on the idea of a complete overhaul, or it is no go. You can nurse this type of plant along for a while and make it work after a fashion, but if you are going to do an overhaul job you can guarantee, a lick and a promise won't do. It takes almost as much time to pump-down and repair two or three floats as it does to pull every boiler on the job. Don't play with it. If you overhaul a plant of this type—go all the way and do the job right. If you don't you will have dissatisfied customers and will soon get a bad reputation. These apartment house overhauls look tough, but when you actually get started you will find that they are not tough at all.

### Specialize

In starting out on contract service it would be advisable to take it sort of easy. You know what type of service work you are equipped to handle, and that is the work you should go after. Although most large service organizations try to handle any kind of service work that comes along, it usually works out to where they are specializing in one or two types of work. If you have a franchise for a certain make of equipment, your best bet is to go after that work. You already have an "in" with the owners who have this equipment, and if you will concentrate your efforts toward lining up this work, you will probably get all the contract service work you can handle.

Then, too, you will probably find that markets, butcher shops, apartment houses, and some creameries, offer the best opportunities for contract service. In some other lines, such as soda fountains, ice cream stores, bars, milk depots, etc., you may find that the operators of these establishments have an agreement with the company whose product they feature, to take care of their refrigeration equipment. In fact, many such establishments do not own their equipment. It is rented from the parent company. Much the same as service station equipment is rented from the oil companies.

Of course, if you could line up the parent company, that would be fine. But as a rule it doesn't pay to line up small operators with one or two package units. Where a store has larger commercial units it is a different story. The best accounts to go after for contract service are chain stores, chain creameries, drug stores, restaurants, and so on. Some of these chain store accounts are pretty big stuff for a small operator. Don't bite off more than you can chew. It is better to start out with a few medium-sized accounts. Then if you find the work to your liking, and can prove your ability



## OWNER'S INSPECTION REPORT

### *Report of Maintenance Inspection*

GENTLEMEN:

Your equipment was inspected and serviced on .....

Remarks

NAME OF FIRM

SERVICE AGENCY

OWNER OR REPRESENTATIVE

SIGNATURE

A simple inspection report such as the above acts as a good reminder to the owner that you are still on the job.

to handle such work, you will have these accounts to use as a reference when you go after the big stuff.

There are many methods of charging for contract service, but I believe the one used by Dell's organization was the best and fairest for everyone concerned. The owner had to pay for everything he got, but he got everything he paid for. There is a lot of difference. After all, both outfits are in business to make money. If they can't get a price that will let them show a profit, they might as well quit. If you run into a prospect who wants you to supply a lot of service at a low price, pass him up. That is, if you are sincere in your desire to render only the best service.

You will run into some bad competition. Competition that will give all contract service a bad name. There isn't much you can do about this. Just operate your own business on a legitimate basis and the sharpshooters will eliminate themselves. It will take time to build up a reputation for fair dealing, but once you have convinced your clients that you are sincere in your efforts to give them good service, you have an excellent chance of getting their business for a long time to come.

### Do's and Don'ts in Contract Service

Don't go after contract service if you do not intend to follow through. It is a long range affair.

Give the best possible service at the lowest price that will let you show a reasonable profit.

Don't bite off more than you can chew.

Be selective in taking on new contracts.

Never argue with the butcher, or any owner, for that matter.

Take time to win the confidence of your clients, and to educate them to appreciate good service.

Make a monthly report. These reports are very important and they should be made out in some detail. Even though you don't have any recommendations for repairs, send in your report. It helps to keep the account alive and lets the client know that you are on the job.

Make a practice of letting the butcher, store manager, or owner see you every time you make an inspection call. It might be a good idea to have some sort of card for the manager to sign each time you call.

Have your monthly report forms detailed enough to show the customer the condition of his plant, but don't swamp him with technicalities.

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### FREEZER "UNLOADING" HITS N. Y.

**D**ISTRESS sales of home freezers by inexperienced manufacturers, held in various sections of the country for some time, are now occurring in the metropolitan area of New York.

# Proposed Miami Ordinance Licenses Contractors and Journeymen

The following proposed ordinance now under consideration in the City of Miami, Florida, is published as an informational service to readers in other cities who may be considering similar ordinances.

J. D. Nall, 2370 N. W. 61st Street, Miami, Fla., one of those active in the formation of the ordinance, invites the criticism of readers on its provisions. Address all comments to him direct.

**A**N ORDINANCE for the protection of the health and safety of the inhabitants of the City of Miami, and to license and regulate persons, firms and corporations engaging in the business or trade of installing, altering, repairing, and servicing refrigerator or air-conditioning systems or equipment in buildings or structures in the City of Miami; adopting and providing for the adoption of rules and regulations concerning refrigeration and air-conditioning equipment; providing for a refrigeration and air-conditioning inspector, and setting forth his duties; providing for the establishment of an examining board and appointment of the members thereof, and setting forth the duties and authority thereof; providing for electrical permit fees for the installation connection, and/or reconnection of equipment; and providing for penalties for violations of this ordinance.

**WHEREAS**, for the protection of the health and safety of the inhabitants of the City of Miami, it is deemed necessary to license and to regulate persons, firms and corporations engaged in the business or trade of installing, altering, repairing, and servicing refrigerator and air-conditioning systems or equipment in buildings or structures in the City of Miami, and to establish a Board of Examiners to examine the qualifications of persons engaging in the business or trade of installing, altering, repairing, and servicing refrigerator and air-conditioning systems or equipment (excepting portable or self-contained units) in buildings or structures in the City of Miami.

Now, therefore, be it ordained by the commission of the city of Miami, Florida:

## SECTION 1

No person, firm or corporation shall hereafter construct, install, alter, repair or service any refrigeration or air-conditioning system or equipment in any building or structure within the City of Miami, or engage in or carry on the business in said City, of constructing, installing, altering, repairing or servicing refrigeration or air-conditioning systems, or equipment (excepting portable or self-contained units) without having first secured a license from the City of Miami authorizing him or them to so do, and paying the fees as set up in this Ordinance.

## SECTION 2. APPLICATIONS FOR LICENSES, AND PROCEDURE

Every person, firm or corporation desiring to engage in or carry on the business of constructing, installing, altering, repairing or servicing refrigeration or air-conditioning systems or equipment (excepting portable or self-contained units) as herein defined, in buildings or structures within the City of Miami, shall make written application to the City for a license to so do, stating therein the name of the person, firm or corporation desiring a license and his or their place of business in said City. No such license shall be issued to any individual to do business as an individual, firm, or corporation, unless he is in possession of a Certificate of Competency (at that time in force) as a Master Refrigeration or Air-Conditioning Installer issued to

him by the Board of Examiners as hereinafter provided for.

The fee for each such license is hereby fixed at the sum of twenty-seven dollars and fifty cents (\$27.50) per annum. Each such license shall terminate the first Monday in October next succeeding the issuance of the same unless sooner revoked or forfeited, and shall not be transferable or assignable. The licensed fee shall be paid at the time of the filing of the application for a license.

## SECTION 3. JOURNEYMEN

No person or persons shall hereafter engage in the occupation of or work as a journeyman on the construction, installation, alteration, repair or servicing of any refrigeration or air-conditioning system or equipment in any building or structure within the City of Miami, without having first secured a Certificate of Competency as a Journeyman Refrigeration or Air-Conditioning Installer from the Examining Board as hereinafter provided for.

No person shall hereafter engage in the occupation of or work as an apprentice on the construction, installation, alteration, repair or servicing of refrigeration or air-conditioning systems or equipment without having first secured from the Examining Board a Certificate of Registration as an Apprentice Refrigeration and Air-Conditioning Installer. At the expiration of four years of service on such work, any person who has so served shall become eligible to make application to said Examining Board for a Journeyman Installer's Certificate of Competency.



#### SECTION 4. EXAMINING BOARD

For the purpose of this ordinance, an Examining Board consisting of seven members shall be created. Six of these members shall be appointed by the City Manager. The Chief Electrical Inspector shall serve as the seventh member ex officio, and shall act as Secretary of the Board.

Three master installers shall be appointed, one from each classification, and three journeymen installers shall be appointed, one from each classification. Their appointment shall be of such duration that not more than one master and journeyman installer's terms shall expire in the same year. The six appointed members shall serve for three-year periods. Each member shall be remunerated at the rate of five dollars for each authorized meeting he attends.

Said Examining Board shall organize within ten (10) days after appointment by the City Manager, and shall elect a Chairman. The Secretary's duties shall be to keep records of all applications, examinations, and renewals, and other activities of said Board and of all fees received and to pay into the City Treasury, as soon after their receipt as practicable, all monies collected by such Board. Meetings of such Board shall be held upon the request of its Chairman, or upon the written request to the Secretary by three members of the Board.

It shall be the duty of such Board to subject each applicant for a Certificate of Competency to such an examination and investigation as they may deem necessary to determine whether he has sufficient knowledge, skill, training and experience to enable him to properly carry on the business of, or work at, the construction, installation, alteration, repair and servicing of refrigeration or air-conditioning systems and equipment, to issue to each applicant who satisfactorily passes such examination and investigation, the desired Certificate of Competency upon his payment of the fees hereinafter provided for, and to issue renewals of such Certificates from year to year, as herein-after provided, upon payment

of the required fees therefor. All examinations shall be held in the office of the City Electrical Inspector and such examinations shall be held during the periods from March 21st until March 31st, and from September 21st until September 30th of each year. In addition to the periods specified above, the City Manager may, upon the recommendation of the Board of Examiners, designate other days for the examination of Journeyman Refrigeration or Air-Conditioning Installers. Examinations shall commence on the day designated and shall continue until all applicants appearing for examination have been examined and the applications for certificates of competency approved or rejected. The Board of Examiners shall examine applicants as to their practical knowledge of refrigeration or air-conditioning construction, as defined in this ordinance. Examinations shall be wholly or part in writing, shall be of a practical character and shall be sufficiently strict to establish the qualifications of the applicant and to satisfy the Board as to the applicant's ability as a Master or Journeyman Refrigeration and Air-conditioning Installer and his familiarity with the rules and regulations governing such work. If satisfied as to the competency of such applicant, the Board shall issue to him a certificate of competency authorizing him to engage in or work at the trade or business of refrigeration or air-conditioning construction, as Master or Journeyman Refrigeration and Air-Conditioning Installer. Previous experience in the trade or business of refrigeration and air-conditioning construction shall be a qualifying factor in determining an applicant's ability as a Refrigeration or Air-conditioning Installer, but no definite length of time to gain such experience shall be fixed as an essential requirement before the granting of a certificate of competency to the applicant and he must first pay the required fee and file an application with the Secretary of the Examining Board. All Certificates of Competency shall expire September 30th of each year, but can and may be renewed before

the expiration of said Certificate.

Any Master Installer holding a Certificate of Competency for which application for renewal is made, shall have been actively engaged in the trade or business of refrigeration or air-conditioning construction in the City of Miami in the capacity of Master Refrigeration or Air-Conditioning Installer as defined in this Ordinance, for a period of at least ninety (90) days during the license year immediately preceding the expiration date of the certificate for which application for renewal is made, or it shall be necessary for him to appear before the Examining Board and pass a new examination before receiving another Certificate of Competency. The Examining Board shall have the power to prescribe all reasonable requirements as to the experience, training and character of applicants for Certificates of Competency, to formulate and hold in accordance with any rules they may establish, all examinations of applicants both written and oral, and to pass upon the competence and fitness of each applicant. The necessary expenses of the Examining Board shall be paid from any funds in the City Treasury available therefor.

#### SECTION 5. APPLICATION FOR CERTIFICATES OF COMPETENCY AND EXAMINATION FEES

Each person desiring a Certificate of Competency as herein provided for, whether for Master or Journeyman Refrigeration or Air-conditioning Installer, shall file with the Examining Board an application for a Certificate of Competency as notice of his intent to take the required examination, and on so filing his notice of intent to take examination shall pay to the Board, an Examination Fee of Twenty-five dollars (\$25.00) if for a Master's examination, and of ten dollars (\$10.00) if for a Journeyman's examination. No examination fee so paid shall be subject to refund to any applicant in case of his failure to pass the examination.

The Board of Examiners is hereby granted authority to waive the payment of the ex-

amination fee for a Certificate of Competency, of any person serving in the armed forces of the United States at the time of the passage of this Ordinance. The application for said Certificate of Competency must be filed with the Examining Board within one year from the date of his discharge from the armed forces and he shall furnish satisfactory proof to the Examining Board that he possesses the necessary qualifications to obtain such Certificate.

#### SECTION 6. FEES FOR RENEWALS OF CERTIFICATES OF COMPETENCY

The applicant therefor shall pay to the Examining Board, for renewal of a Master Refrigeration or Air-conditioning Installer's Certificate of Competency, such as herein provided for a fee of five dollars (\$5.00) per annum, and for renewal of a Journeyman Refrigeration or Air-conditioning Installer's Certificate of Competency a fee of one dollar (\$1.00) per annum. Each such fee shall be paid before the renewal of such Certificate.

#### SECTION 7. DEFINITIONS

For the purposes of this Ordinance, the following definitions shall govern as to the meaning of the several terms and expressions so defined, wherever said terms and expressions are employed in this Ordinance:

**REFRIGERATION SYSTEMS:** A refrigeration system shall be taken to mean a combination of parts in which a refrigerant is circulated for the purpose of extracting heat.

**REFRIGERATION EQUIPMENT:** Refrigeration equipment shall be taken to mean any part or parts of a refrigeration system.

**PORTABLE OR SELF-CONTAINED UNITS:** A factory assembled, complete one (1) piece refrigeration appliance, which is not made to be a permanent part of a building or like structures, that require no other electrical supply than a common wall plug receptacle (110V-x-15 amp.). This unit also must be of less than one third horsepower ( $\frac{1}{3}$  hp.) to comply with this definition. All equipment, regardless of name, that does

not meet these requirements, shall be governed by this code.

**SERVICING:** The term, "servicing," shall be taken to mean and include the cleaning, lubricating, recharging, pumping down and adjusting necessary to maintain in efficient operating condition a refrigeration system otherwise in good mechanical condition.

**DOMESTIC REFRIGERATION:** "Domestic Refrigeration" shall be held to mean a self-contained, factory-assembled single-unit refrigerator of 20 cubic feet or less of mechanical refrigerated space, generally known as a domestic appliance.

**COMMERCIAL REFRIGERATION:** "Commercial Refrigeration" shall be held to mean a mechanically refrigerated fixture or fixtures or space with refrigeration equipment remote or self-contained from  $\frac{1}{2}$  hp. up to and including 5 hp. compressor capacity, normally used in a commercial establishment for refrigeration or air-conditioning purposes with temperatures below 60 F. This also includes comfort cooling and air-conditioning equipment for temperatures above 60 F., but not exceeding 1 hp. compressor capacity.

**INDUSTRIAL REFRIGERATION AND AIR-CONDITIONING:** "Industrial Refrigeration and Air-Conditioning" shall be held to mean all refrigeration and air-conditioning equipment of any size or type of installation for any temperature not included in domestic and commercial classifications.

#### SECTION 8. DEFINITIONS OF CLASSIFICATIONS OF INSTALLERS

The term "Installer" as used in this Ordinance, shall be held to mean a person who is engaged in the trade or business of refrigeration and air-conditioning construction and who is qualified under the terms and provisions of this Ordinance.

The term "Industrial Refrigeration or Air-conditioning Master Installer" as used in this Ordinance, shall be held to mean a person who possesses the necessary qualifications, training and technical knowledge to plan, lay out and supervise the instal-

lation of industrial refrigeration and air-conditioning systems or equipment, as covered by the terms and provisions of this Ordinance.

The term "Commercial Refrigeration or Air-Conditioning Master Installer" as used in this Ordinance, shall be held to mean a person who possesses the necessary qualifications, training and technical knowledge to plan, lay out and supervise the installations of commercial refrigeration and air-conditioning systems or equipment, as covered by the terms and provisions of this Ordinance.

The term "Domestic Refrigeration or Air-Conditioning Master Installer" as used in this Ordinance, shall be held to mean a person who possesses the necessary qualifications, training and technical knowledge to plan, lay out and supervise the installation of domestic refrigeration and air-conditioning systems or equipment, as covered by the terms and provisions of this Ordinance.

The term "Industrial Refrigeration or Air-Conditioning Journeyman Installer" as used in this Ordinance, shall be held to mean a person who possesses the necessary qualifications, training and technical knowledge to install industrial refrigeration or air-conditioning systems or equipment as covered by the terms and provisions of this Ordinance. He shall be capable of doing said work according to plans and specifications furnished to him by the master installer and in accordance with standard rules and regulations governing such work.

The term "Commercial Refrigeration or Air-Conditioning Journeyman Installer" as used in this Ordinance, shall be held to mean a person who possesses the necessary qualifications, training, and technical knowledge to install commercial refrigeration or air-conditioning systems or equipment as covered by the terms and provisions of this Ordinance. He shall be capable of doing said work according to plans and specifications furnished to him by the master installer and in accordance with standard rules and regulations governing such work.

The term "Domestic Refrigeration or Air-Condition-

ing Journeymen Installer" as used in this Ordinance, shall be held to mean a person who possesses the necessary qualifications, training and technical knowledge to install domestic refrigeration or air-conditioning systems or equipment as covered by the terms and provisions of this Ordinance. He shall be capable of doing said work according to plans and specifications furnished to him by the master installer and in accordance with standard rules and regulations governing such work.

The term "Apprentice" in any of the foregoing three classifications shall be taken to mean a person regularly engaged in the refrigeration or air-conditioning industry, learning the business under the direct supervision of a journeyman refrigeration or air-conditioning installer.

#### SECTION 9. PLACE OF BUSINESS AND MINIMUM AGE

Every person, firm or corporation applying for a license under this Ordinance must maintain a place of business in the City of Miami, and no such license shall be granted to any person less than twenty-one (21) years of age.

License and Place of Business to be Recorded: On receiving a license, the licensee shall have the same recorded in the office of the Chief Electrical Inspector together with the place of business, giving the street and number, and in case of removal therefrom shall immediately notify said inspector of the address of his new place of business.

#### SECTION 10. ALL WORK TO BE DONE UNDER SUPERVISION OF LICENSEE

All constructing, installing, altering, repairing and servicing of refrigeration or air-conditioning systems and equipment in the City of Miami shall be done under the immediate supervision and control of a person, firm or corporation duly licensed as provided in this Ordinance.

**Licenses Forfeited, When:** Any person, firm or corporation, duly licensed, as herein provided to construct, install, alter, repair and service refrigeration systems and equipment who shall, as such

licensee, take out or secure a permit, such as required by this Ordinance, for any such work to be done by any person or persons not connected with such licensed firm or corporation, not in the employment of such licensed person, firm or corporation, or who shall allow his or their name to be used by any other person or persons for the purpose either of doing any such work or obtaining a permit therefor, shall by such act, upon conviction thereof, forthwith forfeit his or their license, and the inspector shall thereafter refuse to issue any further permits to do any such work under any license so forfeited.

**Revocation of License:** Upon presentation of satisfactory proof to the Examining Board that any such licensee has failed to conform with the Ordinance provisions of the City of Miami relating to the construction, installation, alteration, repair or servicing of refrigeration or air-conditioning systems and equipment, the Examining Board shall revoke his or their license, and license issued hereunder may be revoked as provided by the Charter of the City of Miami.

#### SECTION 11

For the purpose of enforcing the provisions of this Ordinance there shall be appointed by the City Manager, a Refrigeration and Air-Conditioning Inspector, who shall have been first duly qualified by the Civil Service Board by suitable examination. His compensation shall be fixed by the City Manager and paid from the funds appropriated for that purpose by the City Commission. Said Inspector shall be directed by and be under the authority of the Chief Electrical Inspector of the City of Miami.

It shall be the duty of the said Refrigeration and Air-Conditioning Inspector to inspect all repairs and installations of refrigeration or air-conditioning apparatus (except all appliances or units defined in this code as portable or self-contained) and enforce all laws, rules and regulations relating to refrigeration and air-conditioning installations and major repairs, and to exercise general supervision over all refrig-

eration and air-conditioning construction, except those in residences.

#### SECTION 12

A permit from the Electrical Inspection Division shall be required before installing, or causing to be installed, refrigeration or air-conditioning equipment and systems, or making alteration thereto. Electrical permit fees for the installation of refrigeration and air-conditioning systems shall be as follows:

The total compressor horsepower (hp.): This shall mean the total horsepower (hp.) or tonnage rating (whichever is greater), at any one address, and shall be the basis of computing fees.

½ hp. to 5 hp., \$2.50; 5 hp. and over, \$2.50 plus 50c for each additional horsepower (hp.).

Master and journeymen mechanics in all classifications shall be permitted to disconnect and re-connect motors in order to maintain continuous operation of their equipment, but permits must be secured from the Electrical Inspection Division by the master installer or anyone duly authorized by him within twenty-four (24) hours after service. The replacement of any complete unit component part of all type systems shall be the same as electric motor replacement or connection. The fees for this type of disconnection or re-connection shall be as follows:

Connection or Disconnection	Permit Fee
Up to 1 hp.....	\$1.00
1 through 2 hp.....	2.00
2 through 5 hp.....	3.00
5 through 10 hp.....	4.00
Over 10 hp.....	5.00

No permit will be required for the installation or connection of domestic refrigerators as long as they are a portable self-contained unit containing no valves, with motor less than ½ hp.

#### SECTION 13

The Director of the Department of Engineering is hereby empowered to put into effect such reasonable rules and regulations not in conflict with this Ordinance which he deems necessary for the purpose of more effective control of the repairs and installation of refrigera-

tion and air-conditioning apparatus.

#### SECTION 14

The American Standard Safety Code for Mechanical Refrigeration, approved by the American Standards Association on April 20, 1939 and its subsequent editions, are hereby adopted and made a part hereof.

#### SECTION 15

For the purpose of issuing of permits and the charging of fees, all installations, alterations, repairs, improvements, replacements or additions pertaining to a system of air conditioning, commercial or industrial refrigeration of a total horsepower (hp) of 40 hp., must submit plans and specifications, properly signed, and bearing on each sheet the seal of a Florida Licensed Engineer of

Mechanical Engineering. Said engineer shall tender a certificate, certifying that the plans and specifications conform with this ordinance and all ordinances now in effect in the CITY OF MIAMI, FLORIDA, and also further stating that he is qualified to sign these plans and specifications. Nothing in this ordinance shall be construed to allow or permit the re-use of plans and specifications from one location to another.

#### SECTION 16. VALIDITY

Should any section or provision of this Ordinance be held unconstitutional or invalid by any court, all other sections and provisions shall nevertheless be deemed as effective as though such unconstitutional or invalid section or provision had never been inserted in this Ordinance. This Ordinance does

not nullify the provisions of Ordinance No. 795 and Amended Ordinances No. 2978 and 2577 covering Plumbing Installation, and Ordinance No. 1554 of the Miami Building Code.

#### SECTION 17. VIOLATIONS

The continued violation of any provision of this Ordinance shall be and does constitute a separate offense, under this Ordinance, for each and every day such violation shall continue.

#### SECTION 18. PENALTY

Any person, firm or corporation who shall violate any provision of this Ordinance shall be subject upon conviction thereof, to a fine of not more than five hundred dollars (\$500.00) for every offense, or to imprisonment not exceeding sixty days.

### HELMINAK REPLACES WESTON AS EXECUTIVE V. P. OF N.A.R.C.

GERALD W. WESTON has resigned as executive-vice-president of the National Association of Refrigeration Contractors, and has been succeeded by J. J. Helminak of Cleveland.

According to Mr. Weston, the rigors of the Cleveland winters have undermined Mrs. Weston's health; consequently, they are returning to Los Angeles. They will travel by auto, and en route he will hold meetings with NARC members and interested contractors in some of the important cities such as Kansas City, Oklahoma City, Dallas and Fort Worth, Houston, Galveston, San Antonio, El Paso, and Phoenix.

Mr. Weston announces that his future plans are uncertain, and will not be definitely settled until he reaches Los Angeles to personally check into several possibilities.

Mr. Helminak brings to the position a very broad, well-rounded business experience.



J. J. Helminak

His early background included selling, credit and collections, and vocational work. Later he became assistant treasurer of a large Cleveland manufacturing concern. This was followed by an association with a business management corporation which operated as counselors in management, production, finance, export, sales, advertising and labor relations.

He is married and the father of a daughter and son.

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### DISCUSSIONS AT CHICAGO MEETING

AS REPORTED by N.A.R.C. here are the high spots of discussion at the recent Chicago meeting: Special efforts must be directed to architects, engineers and general contractors emphasizing the importance of refrigeration and air conditioning as an important business, separate and distinct from plumbing, heating or sheet metal business with which it is somewhat mixed at present; licensing of contractors is an important factor in assuring more work by qualified firms, with better user satisfaction and higher safety to persons and property, but it must go along with a good safety code; contractors should hesitate to lay themselves open to possible future difficulties by featuring manufacturers' trade name signs and advertising but, instead, should play up their own company names.



## QUESTIONS and ANSWERS

On Problems of Servicing and Installation of Refrigerating Equipment—Send Your Problems to the Question Box.

### COMMENTS ON QUESTIONS

REFERENCE TO QUESTION 805: It would be my guess that when this compressor is dismantled, the inquirer will find our old friend "Copper Plating" is the cause of his trouble. Many of us in the Servel family have witnessed this phenomenon back in the early days before the "discovery" of white oil and admittedly before the days of chemically "pure" methyl chloride.

I had thought this problem was pretty much behind us (as an industry) until I encountered a really severe case over in Riverside where I found a serviceman cleaning up an affected (Copeland) compressor. The connecting rod (throw) bearings were just about frozen tight. Then, last Thursday night when I presented the Supermetec story to the Beehive Chapter in Salt Lake City, I was amazed to note the number present who had, or were having trouble with "Copper Plating."

One described the condition as showing up mostly where methyl had been substituted for Freon-12 during these days of Freon shortage. And he might have something there, although we have been able to prove "Copper Plating" can occur in a Freon-12 charged job, too. Of course, our stock answer has been "use white oil," or more specifically "Servel White Oil," or "Servel Approved White Oil." More recently at least one "slightly amber" oil has come to light which appears to be satisfactory but it has not as yet been made available on a national basis.

In the meantime, notwithstanding contrary comment from noted authorities "we'd say, clean up the affected compressor—remove all traces of the copper plating by burnishing with fine emery cloth, etc. (really not plating at all, but the result of copper dust being rubbed into the metal pores by friction of the parts)—blow the charge, substitute (Servel) White Oil, mount a suitable silica gel liquid dehydrator and recharge with new methyl chloride—and the job should operate okeh."

This, of course, assumes no aluminum or "die cast" metal alloys are being used in the system (such as in die cast rotors of sealed units—and body parts of control devices or in the evaporator proper).—C. L. Olin, Western Manager, E. R. Division, Servel, Inc.

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### WATER COOLING IN BOTTLING PLANT

QUESTION 815: I have a customer who operates a small bottling plant. This plant uses 600 gallons of water per day at a temperature of 36 degrees. The water going into the tank has a temperature of 84 degrees. Four hundred gallons are left in the tank overnight. During the day, water is added to the tank as it is used by the bottling machine.

The tank has a coil made of 96 ft. of  $\frac{3}{4}$ " tubing fed by a thermostatic expansion valve. A 3 hp. unit runs all the time, day and night, to cool this water. The gauges show the proper pressures and I don't think the unit is low on gas. Is the unit too small, the coil too small, or both?

ANSWER: I assume in the following calculations that the 600 gallons of water used in the bottling plant are used during an eight hour period which is very likely the working hours of the plant. My calculations show that the 600 gallons will require 244,800 Btu's. of cooling from the incoming temperature of 84 degrees down to the desired temperature of 36 degrees. This cooling would have to be done in the eight hour working day of the plant which means that the load would be 30,600 Btu. per hour during the eight hours.

Assuming a 20 degree suction pressure on a 3 hp. water cooled unit, the capacity of the unit should be in the neighborhood of 31,000 Btu. per hour. Comparing your load of 30,600 Btu. per hour with this average unit capacity I assume that the engineers in designing this system planned on the condensing unit running almost continuously for eight hours, then catching up on the load during the night and laying idle most of the night.



Our calculations on the coil size come out with about the same picture. In other words we assume a 10 degree T.D. in the 96 feet of  $\frac{3}{4}$  inch coil, and using a "K" factor of 18 would come out to a coil capacity of 33,792 Btu. which compares quite favorably with the load imposed on it. Presumably, then, the size of the unit and coil are satisfactory and it is necessary to look elsewhere for the remedy of the continuous running of this condensing unit.

It might be well to check into the incoming water temperatures which in certain months of the year may rise sufficiently to impose a much heavier load on the unit. Another factor would be the proper adjustment of the expansion valve and you should make sure that the entire coil is being refrigerated, thus gaining the highest possible efficiency from it.

### FUR STORAGE ROOM

**QUESTION 816:** In May of 1947 we installed a 5 hp. Par compressor, 4 Bush UC-85 blowers in a fur storage room 60 ft. long, 24 ft. wide, 12 ft. high, using methyl chloride gas. This room has 12" of concrete on the outside, 4" of insulation on the inside and a plaster coat. We did not dry this room out at the time of installation, as we had to get it going for May 1st.

Now our problem is that we cannot bring our room down to 38 degree temperature—and keep our humidity between 55 and 60. We have adjusted our expansion valves so that we have a super-heat of about 20 degrees. We are operating at a 12 lb. back pressure. There is plenty of refrigerant in the system. The minute we try to get our room down below 44 degrees we frost our blowers. There is no one working in the room. All we have in it is about 500 coats, and they have been there for several months. Our humidity is down to about 60 now at a 44 degree room temperature.

We are using a W.R. thermostat in the room to control a solenoid on the liquid line. We have a low pressure control stopping and starting the compressor. We keep the blowers running continuously on a separate line. We have a large heat interchanger, also, in the system.

We certainly would appreciate hearing your comments on this situation.

**ANSWER:** My first suggestion in overcoming the difficulties you are having with a fur storage room is that you return the expansion valves to their original superheated adjustment of 10 degrees. Cutting down these valves to a superheat of 20 degrees in my opinion is aggravating the situation rather than improving it.

Rough calculations indicate that the 5 horsepower condensing unit is large enough to handle this job, and I imagine this is further indicated by the fact that the compressor is cycling normally. You did not state this definitely in your letter but you seem to indicate it when you say that the low pressure control stops and starts the compressor.

I have no data on the capacity of Bush UC-85 blowers coils, therefore have no means of calculating their capacity as against the required capacity. It is possible that you have not sufficient coil area to handle the job but I have no means of determining this point definitely. It would seem to me that if you readjust your expansion valves to a 10 degree superheat and make sure that the entire coil of each of the four Bush blowers is completely refrigerated, you should be able to maintain the desired temperatures in this room.

Undoubtedly the first two or three months' operation would be affected by the moisture in the walls of the room. This should be overcome by this time and proper adjustments should be secured. I assume that when insulating the walls of the room, proper vapor barriers were included on the outside of the insulation, thus there should be no trouble arising from moisture soaked insulation at this time.

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REFRIGERATION SERVICE  
ENGINEERS SOCIETY  
HOTEL HOLLENDEN • JAN. 21, 22, 23, 24



## SERVICE POINTERS

A department for the exchange of ideas on new devices and methods of improving service work. Five dollars is paid for each pointer published. Write up your idea today and mail it to the Service Pointer Editor.

### COMMENTS ON POINTERS

HAVING been a subscriber to your magazine for the past seven years, I have enjoyed and benefited by the many discussions relating to service problems. In your September issue, page 50, under "Grunow Won't Pump," I am going to take C. A. Wilhelm to task and also de-point this article.

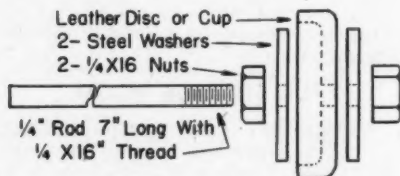
He claims that he stuck a pointed tool in the suction connection and pierced the suction screen. May I point out that we are exclusive Grunow distributors for parts and service and that this is the last thing that a competent serviceman would do? This is what is going to happen to the compressor in question. (If it hasn't happened already.) First of all, the dirt and grit is going to be nicely ground up in the pump, from where it will travel out the discharge side and plug up the drier and also the radiator. Then the customer will be in line for a large repair bill or if another serviceman gets this job and explains what was done to the customer, then he will be justified for calling our industry a bunch of gyp artists. Too much of this kind of work is being done and I feel it my duty in the interest of our business which is our bread and butter, to correct any serviceman who makes a practice of this kind of service.—*E. H. Windl, Service Radio & Appliance Co., Milwaukee, Wis.*

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### LAPPING TOOL

SOME time ago I became interested in purchasing an expansion type honing device similar to those found in the automotive trade. Unable to find one suitable for small compressor bores, I devised the following for use with my  $\frac{1}{4}$ " portable electric drill. I have found coarse threads on the rod more suitable due to the lapping compound. For leather discs I have found compressor belting and sole leather very satisfactory. Any leather from  $\frac{1}{8}$ " to  $\frac{1}{4}$ " thick is suitable. I have found that a stiff leather disc gives the

quickest and best results. This, however, does make it more difficult to properly oversize the disc to the compressor bore you wish to clean up.

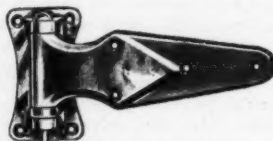


I have used regular automotive valve grinding compound to impregnate the edge of the disc. This works very satisfactorily for cleaning up sulphur compressors and compressors that are copper-plated. Needless to say, with a few assorted leather discs this beats wrapping sandpaper around two fingers and wondering why on earth you ever decided to make a living fixing refrigerators!—*Submitted by John W. Fox, Salisbury, N. C.*

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### REPAIRING HINGES

ON OLDER household machines that have badly worn hinges, I remove the old pin, run a steel drill through that is large enough to round out ovalness and put

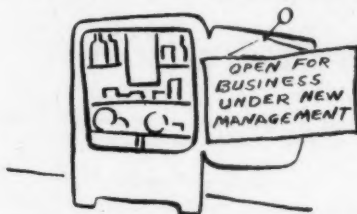


in new pins. These pins can be made of brass or iron bolts cut and heads ground to proper size. If the body of the hinge is worn too bad a piece of tubing or pipe can be welded or brazed in place for pin support.—*Submitted by H. K. Danielson.*



## COST OF GUARANTEE ON USED BOXES

A REFRIGERATOR repair company in Denver, Colorado, doing rebuilding of used refrigerators for dealers, sets a price of \$8.00 for a year's guarantee on these



boxes. The dealer who wants to sell used refrigerators with a year's guarantee adds the \$8.00 to the price to the customer, then turns this amount over to the service company who takes the responsibility from there.

\*\*\*

## BLUE FINISH FOR STEEL

YOU can give those polished steel or iron parts and tools a gun-blue finish by dipping them in copper sulphate solution and

then in a solution of hyposulphite of soda, containing a little hydrochloric acid.

\*\*\*

## CLEANING A GRINDSTONE

DID you know that if your grindstone becomes badly coated with dirt and steel, holding a piece of ice against it while it is turned slowly, removes the accumulation very quickly?

\*\*\*

## COOLED WATER WITH SERVICE

PLANS for all Gulf service stations now being built and all those proposed under a new building program call for installation of mechanically refrigerated water coolers; in line with the new trend toward acceptance of water coolers, as essential service and merchandising equipment.

F. P. McLaughlin, Manager of Service Stations for the Gulf Oil Corp., Pittsburgh, Pa., declared that "as a service to thirsty motorists, water coolers rank with travel information, clean rest rooms, and other services rendered our customers.

"We also have learned that a cool water supply will induce the driver to leave the wheel and come inside for a drink where merchandise is displayed," he said.



"WELL! I GOTTA MAKE A LIVING TOO—DON'T I?"

Compressor—Motor—Hermetic Rebuilders  
Your Opportunity—Immediate Action Please!

## Directory of Refrigeration Services Invites Your Registration

AS A service to its readers THE REFRIGERATION SERVICE ENGINEER is going to publish a directory of refrigeration repair and exchange services in a forthcoming issue, and all companies offering repair or exchange services to service companies such as listed below, are invited to register for listing in the directory.

### An Opportunity

Here is an opportunity to list, at no cost to you, those special repair services you are offering to service companies. This directory service, reaching all readers of this journal, will inform the serviceman just where he can send that hermetic unit, that compressor or motor to be repaired or exchanged. It will show him who spe-

cializes in the work he wants done and the address of the nearest such service.

### Don't Delay—Register Now

If you have a repair or exchange service to offer the trade and would like to be listed in this directory, REGISTER NOW. Answer the questions in the following questionnaire and mail at once to—DIRECTOR OF SERVICES, REFRIGERATION SERVICE ENGINEER, 433 N. WALLER AVE., CHICAGO 44, ILL.

All listings in the directory must be in our hands not later than December 25th to be included, so don't delay—send yours in now. Tear out the following questionnaire and use it for your listing if you wish, or write a letter giving the following particulars.

Company Name .....	
Please print name clearly as it should appear in directory	
Street Address.....	City and State.....
Your Name.....	Position.....
Owner, Manager, etc.	
Is repair or exchange service your principal source of business?.....	
If not, what other refrigeration work are you engaged in?.....	
Do you have a catalog of services?..... Statement of policy and flat rate prices?..... If so, please attach for our files.	
Place an (X) in the box in front of the services you offer.	
<input type="checkbox"/> Hermetic Unit Rebuilding	<input type="checkbox"/> Expansion Valves
<input type="checkbox"/> All Makes	<input type="checkbox"/> Water Valves
<input type="checkbox"/> Specialize in (List Makes)	<input type="checkbox"/> Compressor Valve plates
.....	<input type="checkbox"/> Crankshaft grinding, etc.
.....	Others—Please list.
.....	.....
<input type="checkbox"/> Compressor Rebuilding	.....
<input type="checkbox"/> Motor repair and Rewinding	.....
<input type="checkbox"/> Cold controls and Thermostats	.....



CONVENTION  
HEADQUARTERS  
HOTEL HOLLENDEN

*Within two blocks of the  
Cleveland Public Audi-  
torium.*

## *Cleveland Prepares for* **10th Annual RSES Convention**

**W**ITH a background of a somewhat recent experience in planning for conventions, Cleveland is making final preparations for the 10th Annual Refrigeration Service Engineers Society meeting, January 21, 22, 23 and 24. Cleveland Chapter acted as hosts to the 9th Convention in October, 1946.

This year the Buckeye (Ohio) State Association, although less than a year old, is a well functioning organization and is meeting regularly to complete the many details attendant to the conduct of a successful meeting. Cleveland Chapter, as a member of the Buckeye Association, is charged with the responsibility of completing the local arrangements.

### **Housing**

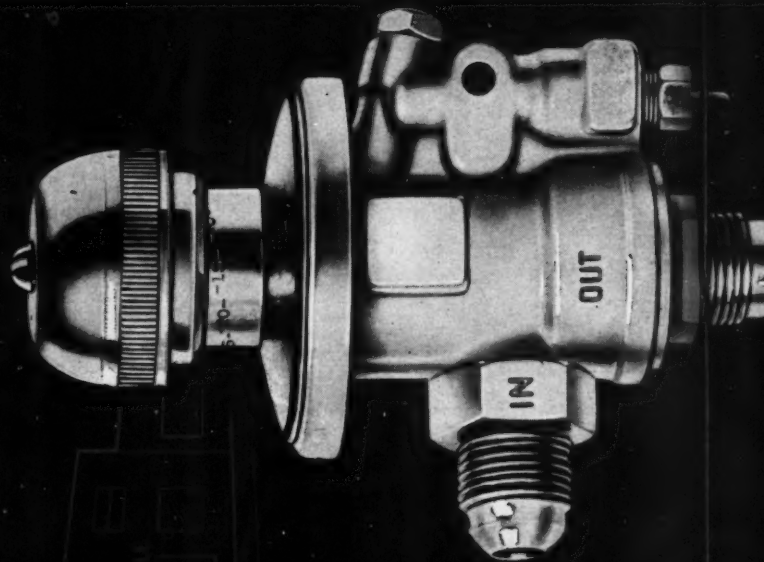
Various hotels have been selected as association headquarters by organizations meeting in Cleveland prior to or during the All-Industry Exhibition, January 25-29, which follows the RSES convention. The Hollenden Hotel is the official headquarters of the Society.

Each member has been mailed an official RSES hotel reservation card. *If you have not returned your card, do so immediately.* Accommodations are being assigned in the order received and when rooms at the Hollenden are exhausted, it will be necessary to assign reservations to other outlying hotels. Reservations should be returned not later than December 20 to insure accommodations.

### **Educational Meetings**

The International Educational and Examining Board is completing their work. Highlights of the Educational conference will include such subjects of interest as: Leak Detection, Refrigeration of Fresh Meats, Two and Three Stage Systems, Solids in Refrigerating Systems, Truck Refrigeration, Water Towers, Evaporative Condensers and Safety.

Adding to the value and interest of the program, arrangements are being concluded to devote one afternoon to visits to manufacturing plants. One such visit is being arranged to cover one of the largest refrig-



# Your Refrigeration Equipment Wholesaler

...SOL of SERVICE

# Wholesaler

SYMBOL OF SERVICE in a GREAT INDUSTRY

SERVICE ENGINEER

THE triumphs and troubles, the progress and problems of refrigeration are all reflected in the busy routine of your Refrigeration Equipment Wholesaler. The center and hub of refrigeration service in each community, he offers far more than easily accessible stocks of hard-to-get parts and supplies. He offers, as well, knowledge, experience, cooperation in service problems, and a zealous regard for the welfare, business problems and success of his friends and customers. These are the thousands of Refrigeration Service Engineers who maintain the nation's refrigeration systems day in and day out.

You may depend on your local Refrigeration Equipment Wholesaler for an increasing high standard of service and the best and latest in Refrigeration parts and supplies.



## SERVICE TIPS

Improve multiple systems in soda fountains, meat markets, beer depots — with

### A-P Dependable Model 235-S Section Pressure Regulating Valve

When you need faster, closer, more accurate control of evaporator pressures — or must operate two or more evaporators at different temperatures from a single condensing unit — the A-P Model 235 Section Pressure Regulating Valve is indispensable. Maintains constant pressure regardless of load change. Can be adjusted to system immediately, with adjusting knob and graduated collar — no waiting for system to settle down. An exclusive time-saving feature.

Put the Model 235-S to work on your systems — for greater customer satisfaction. At your wholesaler — or write for bulletin M110.

## AUTOMATIC PRODUCTS COMPANY

2454 NORTH THIRTY-SECOND STREET • MILWAUKEE 10, WISCONSIN



# DEPENDABLE REFRIGERANT VALVES

STOCKED AND SOLD AT GOOD REFRIGERATION WHOLESALES EVERYWHERE • RECOMMENDED AND INSTALLED BY LEADING REFRIGERATION SERVICE ENGINEERS

## ***Exhibit Your Service Truck at the RSES Convention***

**A**N interesting convention feature will be an exhibit of service trucks convenient to the Hollenden Hotel.

If you have a good service truck either custom built or constructed by your own organization, drive it to

the convention. Accommodations will be provided by the committee for its display and storage in a neighboring garage.

The only restriction is that the truck be a pickup panel type job of one ton or less.

### **Prizes to Be Awarded**

Prizes for the best job in either the custom built or self constructed class will be awarded by popular ballot of those visiting the displays.

*Here is an opportunity for you individually to contribute to the educational feature of the annual RSES Convention.*

Display your service truck for the benefit of other fellow service engineers. If your truck will be displayed, notify the General Convention Chairman, R. D. Hollingsworth, 1672 Wyandotte Ave., Lakewood 7, Ohio, and suitable arrangements will be made for its accommodation.

eration installations in the country, where the equipment is used to further scientific developments in our national defense program.

The "warm up" sessions preceding each day's educational session affords you the opportunity of bringing your individual service and installation problems to the convention and having them answered by the "Board of Experts."

### **Entertainment**

"All work and no play" makes for a dull existence. Convention entertainment features afford a pleasant relaxation and the opportunity of renewing old acquaintances and meeting new friends. Entertainment features of RSES conventions are always "top" affairs. This year the grand "get-together" party and dinner will be held on Wednesday evening, January 21. Thursday evening is free so that members and guests can see Cleveland as they desire.

The annual dinner-dance will be held on Friday evening, January 23.

### **Registration Costs**

In spite of tremendously increased costs, convention committees have been "economy" minded to "hold the line" on costs. No increase over last year's entertainment func-

tions will be shown. Tickets for members for dinner and entertainment on Wednesday evening and dinner and dancing on Friday evening will be \$10.00 including registration fee. Tickets for non-members for these events, including registration fee, \$15.00.



**REFRIGERATION SERVICE  
ENGINEERS SOCIETY  
HOTEL HOLLENDEN • JAN. 21, 22, 23, 24**



*On the target!*



You can't miss on the toughest repair job . . . when the part you use is *dependable!*

At any of the 50 Kelvinator parts depots you can choose from a *complete* stock of *quality* refrigeration parts . . . *competitively priced.*

Kelvinator, Division of  
Nash-Kelvinator Corporation,  
Detroit, Michigan.

**GET YOUR COPY!**

New Handy Catalogue of  
Refrigeration Supplies

Order from this big, new,  
illustrated catalogue!  
Parts numbers, specifications  
and prices are  
grouped for ready reference.  
Ask for it at your  
nearest Kelvinator Distributor's  
or Zone Office.



**Kelvinator**

CONDENSING UNITS  
REFRIGERATION PARTS AND  
SUPPLIES



BUY KELVINATOR FOR ALL YOUR REFRIGERATION REQUIREMENTS

## REGISTRATION INFORMATION FOR RSES CONVENTION

**M**EMBERS and guests are urged to make advance reservations for tickets for the entertainment features of the 10th Annual RSES Convention.

To accommodate comfortably those who will participate in the get-together dinner and party on Wednesday evening, January 21, and the annual dinner-dance on Friday evening, January 23, advise International Headquarters, Refrigeration Service Engineers Society, 433 N. Waller Ave., Chicago 44, Ill., of the number of tickets to be reserved in your name.

Capacity of the banquet hall is limited to a specified number and your early reservation will avoid any disappointment. Make sure your reservation is mailed promptly.

### Price of Tickets

**MEMBERS**—For the big events on Wednesday and Friday evenings, tickets are \$10.00 per person for members, which also includes your registration fee.

A nominal registration fee of one dollar will be charged for *members* who will attend the educational sessions only.

**GUESTS**—Tickets for the two entertainment features for *non-members* will be \$15.00 per person. A non-member desiring to attend the educational sessions only will pay a nominal registration fee of two dollars.

Members desiring to attend only the educational conferences and not participate in the entertainment features, will pay a nominal registration fee of one dollar. Non-members will be registered for two dollars.

### Bring the Ladies

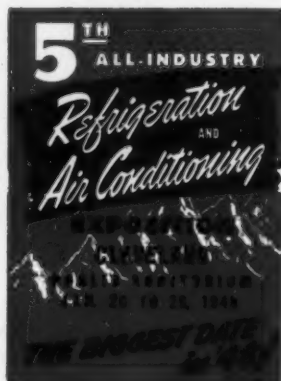
Each year sees an increase in the number of ladies present at each convention. It is expected that this year will record a further increase. Whether or not the lady is a member of the Auxiliary, she is invited to participate in all the entertainment events of the convention.

## BUCKEYE ASSOCIATION TO HOLD SAFETY "JINGLE" CONTEST

**M**EMBERS of the Buckeye Association are becoming more safety minded and the influence of this worthwhile activity is spreading throughout the country. Many of the Ohio chapters have been fortunate in having George Schuld, Cleveland, Ohio, Chairman of the International Association's Safety Committee, as guest speaker. Mr. Schuld has accumulated a wealth of information on safety procedures to be correlated and provided eventually in bulletin form to the membership.

To emphasize the importance of the practice of safety in every day work, the Buckeye Association is conducting a contest, requesting members to submit safety "jingles." The winning "jingles" are to be posted at the forthcoming International Convention.

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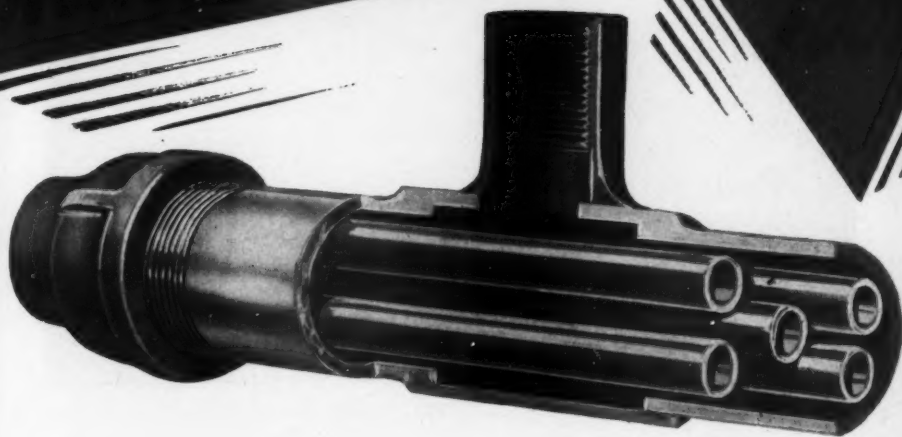


### ALL INDUSTRY BANQUET

**O**N Wednesday Evening, January 28, the Refrigeration Equipment Manufacturers Association is holding an All Industry Banquet.

The banquet and entertainment will be held in the Auditorium where the All Industry Refrigeration and Air Conditioning Exposition is being held.

Advance reservations are necessary as the tickets available are limited. The cost is \$7.50 per person, tax included. Reservations with remittance should be mailed immediately to R. K. Hanson, Show Director, 1107 Clark Bldg., Pittsburgh 22, Pa.



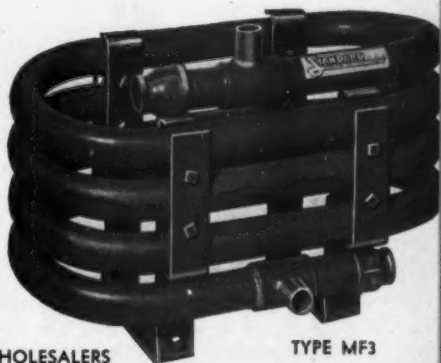
**H**IGH capacity per unit foot means less condenser length. This maximum heat transfer is a design feature of STANDARD MF condensers. Note the cut-away heat exchanger tee showing multiple tube construction.

All Type MF condensers contain a cluster of parallel tubes terminating in a brazed header at the heat exchanger tees. This assures long service-life and **accessibility for cleaning**.

Five multiple half-inch copper tubes are used in the MF 3 and 5 condensers. Smaller sizes are built with three tubes—larger sizes up to 15 tons rating are built with nine tubes, providing greater capacity with minimum space requirements.

*All STANDARD Condensers are listed under Underwriters' Laboratories.*

SOLD THROUGH LEADING REFRIGERATION WHOLESALERS



TYPE MF3

# Standard Refrigeration Co.

20 North Wacker Drive

Chicago 6, Illinois

## 5th All-Industry Exposition to Offer Many Attractive Features



The Cleveland Public Auditorium in which the 5th All-Industry Exposition will be held January 26-29.

**W**HEN the curtain rises January 26th on the Fifth All-Industry Refrigeration and Air Conditioning Exposition in Cleveland's great Public Auditorium, it will reveal two acres of displays and demonstrations of the last word in refrigeration units and equipment.

The four-day national trade show is sponsored by the Refrigeration Equipment Manufacturers Association. According to F. J. Hood, show committee chairman, the exposition has been planned as a focal point for the many segments of the broad refrigeration and air conditioning industry, from the men who design and manufacture the industry's products, on through the men who distribute and sell these products, to the men who install and service them.

More than 200 exhibitors will have presentations of industry-wide interest. The exposition promises to be every bit as large



F. J. HOOD

as the 1946 show in Cleveland which was acclaimed as one of the greatest shows held by any industry. More than 5,000 pieces of equipment were exhibited at that show, and the value of displays and costs of company participation were placed at \$2,500,000.

No phase of the activities of the industry will be neglected next January in the exhibits which will fill the floor space available in four exhibition halls in the huge Auditorium. The list of exhibitors includes large and small manufacturers of complete refrigeration and air conditioning units, as well as those firms making chemicals, parts, and various other components and accessories. The show will afford a complete and comprehensive picture of the postwar mechanical refrigeration and air conditioning industry.

In keeping with the ever-increasing popularity of frozen foods, there will be many exhibits devoted to home freezing units and commercial equipment for the freezing, storing, transporting, and retailing of frozen foods. Refrigerated trailers and trucks will be displayed. Also scheduled for showing are portable frozen food display cabinets for easy movement to various parts of a store, new ideas for pictorial display of frozen foods over cabinets, self-service dis-

## A DOG'S LIFE



Not many dogs, and fewer humans, manage to enjoy life in the frigid regions around the Pole. Those whose business takes them there derive cold comfort from the piercing frost of the desolate Arctic ice-cap.

Those whose business is in the refrigeration, cold storage, or frozen food lines in these temperate parts, however, must create cold artificially . . . and, if they are wise, they safeguard it with Jamison Cold Storage Doors. The prestige of the Jamison name has been earned by half a century of satisfactory service, in all

manner of cold storage installations, in all parts of the world. In a field where failure is costly, Jamison-built Doors have consistently proved their efficiency, dependability, and economy.

Jamison, Stevenson, Victor, and NoEqual Doors, and related products, comprise the standard Jamison line . . . with special types built on order. Full information about Jamison products and the Jamison way of doing business . . . with address of nearest branch . . . will be sent upon request. Write Jamison Cold Storage Door Company, Hagerstown, Md.

**Branches in  
Principal Cities,  
Coast to Coast**



**JAMISON**  
COLD STORAGE DOORS

play cases with glass fronts, and other developments in the retailing of frozen foods.

Along this line, there will be displays and demonstrations of refrigerated bottle coolers, beer dispensers, beverage vending machines, sandwich units, dough retarders, soda fountain coolers, farm milk coolers, ice cream cabinets, and numerous similar units.

Walk-in coolers will be shown, including dual-temp arrangements combining a normal temperature walk-in cooler with a reach-in freezer.

There will be  $7\frac{1}{2}$  cubic foot home freezers which, because they utilize new insulation materials, occupy less space than some five-foot units. There will be table-top freezers and refrigerators as companion pieces which fit into complete modern kitchen assemblies. And, of course, all the other new styles and ideas in modern home refrigerators will be displayed and explained.

New lines of home and office packaged air conditioning units will be shown for the first time, along with other equipment for commercial, industrial, and home air conditioning.

Of particular interest will be complete displays of improved postwar drinking water coolers, including bottle and bubbler units, cafeteria types, and central systems.

#### Parts and Accessories to Be Shown

Thousands of parts, accessories, and materials covering the entire field will be exhibited, including numerous innovations never before shown. There will be compressor units using Freon 22, vaneless type rotary Freon compressors with fewer moving parts, the very newest insulation materials, and belts made of rayon cord.

Also on display will be late model motors, oil separators, motor starting relays, plate evaporators, coils, pressure and temperature controls, condensing units, hardware, valves and fittings, refrigerants, valve plates and seals, and scores of other components, along with various tools and equipment for service men. Industry associations and publications also will have booths.

Exhibitors have given much thought to arranging displays which will be of maximum interest to the many thousands of manufacturers, engineers, contractors, service engineers, wholesalers and dealers from all parts of the country who will attend the Fifth All-Industry Exposition. Thousands of pieces of equipment will be in operation. There will be working models, cut-away models, and glass housed machinery to ex-

plain the mechanics of various products. The smallest hermetic motor-compressor in the world will be on display. Colored slides and oversize photographs will tell manufacturers' stories. There will be a display of the solids formed by chemical and physical action in refrigeration systems. Innumerable other demonstrations are planned to make the exhibits as interesting, understandable, and dramatic as possible.

#### Hotel Reservations

During the period of the show, Jan. 26-29, Cleveland will be the mecca for the entire refrigeration and air conditioning industry. In addition to the exposition, which is expected to attract close to 20,000 visitors, associations and other industry groups are scheduling meetings and gatherings which will act as an added lure in bringing to Cleveland representatives of all segments of the industry from all parts of the nation. According to show officials, if you have not already made hotel reservations, you should do so immediately through the Cleveland Convention and Visitors Bureau, mentioning your association connections so that you will be housed, if possible, with others who have similar interests.

The Sixth All-Industry Exposition is also scheduled for the Cleveland Auditorium during the week of November 7, 1949.

Hotel assignments for the 1948 show are as follows:

REMA, Hotels Cleveland and Carter; exhibitors, both members and non-members of REMA, Hotels Cleveland and Carter; National Association of Refrigeration Contractors, Hotel Allerton; National Commercial Refrigerator Sales Association, Hotel Auditorium; Refrigeration Equipment Wholesalers Association, Hotel Statler; and Refrigeration Service Engineers Society, Hotel Hollenden.

#### Show Hours

The exposition halls will be open to the entire industry on Jan. 26 from 2 to 10 p.m., Jan. 28 from noon to 6 p.m., and Jan. 29 from 10 a.m. to 4 p.m. They will be open exclusively to refrigeration contractors, dealers, and service engineers from noon to 6 p.m. on Jan. 27, and there will be a preview for wholesalers only on Jan. 26 from 10 a.m. to 2 p.m. The show will not be open to the general public. Only members of the trade will be admitted.



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YOU ARE WITHIN  
ONE-DAY DELIVERY  
OF GENUINE  
UNIVERSAL COOLER PARTS



It is important to you to know that genuine Universal Cooler replacement parts are available from more than 160 parts jobbers throughout the United States.

It is even more important that these jobbers are strategically located—wherever you are, you are within one-day delivery of genuine Universal Cooler parts.

If you don't find a U. C. parts jobber listed in your directory, we'll gladly furnish the names of those serving your territory.



DIVISION INTERNATIONAL DETROIT CORPORATION  
MARION, OHIO • BRANTFORD, ONTARIO



# NEWS *and* ACTIVITIES

Announcements of the activities and educational work of the International Society and Local Chapters appear in this department.

## COMING CONVENTIONS

**RSES Annual Convention**  
Place: Hollenden Hotel  
City: Cleveland, Ohio  
Date: Jan. 21, 22, 23, 24, 1948  
Secretary: H. T. McDermott, 433 N. Waller Ave., Chicago 44, Ill.

**R.E.M.A.—All-Industry Exposition**  
Place: Cleveland Public Auditorium  
City: Cleveland, Ohio  
Date: January 26-29, incl., 1948  
Secretary: R. Kennedy Hanson, 1107 Clark Bldg., Pittsburgh, Pennsylvania

**Virginia State Charter Meeting**  
City: Richmond, Va.  
Date: February 14, 1948  
Chairman: B. A. Hauck, 3110 Kensington Ave., Apt. 9, Richmond, Va.

**Iowa State Association**  
City: Waterloo, Iowa  
Date: March 6 and 7  
President: Ervin Meyer, 2960 Jefferson Ave., Davenport, Iowa

**Interprovincial Association**  
Place: King Edward Hotel  
City: Toronto, Ont.  
Date: March 9, 10, 1948  
Secretary: E. G. McCracken, 215 Laird Drive, Leaside, Ontario.

**California State Association**  
Place: Palace Hotel  
City: San Francisco, Calif.  
Date: April 30, May 1 and 2  
Chairman: David Fagg, 1951 E. 14th St., Oakland, California

## MRS. CLYDE COPP PASSES AWAY

**H**EARTFELT sympathies are extended to Mr. Clyde L. Copp, whose wife passed away November 8. Mrs. Copp was a very active member of the Ladies Auxiliary of the Tulsa Chapter and Mr. Copp is a charter member of the Oil Capital Chapter. Mrs. Copp is survived by her husband and one daughter 2½ years old.

## ILLINOIS 10TH CONVENTION DRAWS GOOD ATTENDANCE

**A**LTHOUGH the Illinois State Convention did not officially open until Saturday morning, November 1, advance registrations were received Friday night with nearly 100 members and their families registering. The get-together meeting held Friday night and presided over by Frank Frazee, Westerlin and Campbell Company, Chicago, proved very educational. A lively discussion on many service problems kept the meeting in session until nearly 11:00 o'clock. One of the interesting high-lights was a discussion by Mr. Frazee on the proper way of selling yourself to your customer.

Saturday morning the convention opened with a business session, then during the noon recess, luncheon was served in the Community building for all in attendance. This luncheon was put on by the ladies of Tri-County Chapter, hosts of the meeting, with Mrs. R. C. Marquis of St. Charles heading the committee.

## New Officers

The election of officers, held during the afternoon, resulted in the following: William McCarley, Joliet, *President*; Frank Frazee, Chicago, *1st Vice-President*; Leslie Sturch, Rockford, *2nd Vice-President*; Berl V. Clark, Aurora, *Secretary*; Ralph Porter, Bloomington, *Treasurer*; Charles Fox, Springfield, *Sergeant-at-Arms*.

The balance of the afternoon was devoted to the educational program. The first speaker was Tom Lester of Kold-Hold Mfg. Company, who gave an informative talk on the application of cold plates. Following this talk, a technicolor film "Frozen Freshness," produced by Frigidaire Corp., was presented. The next speaker of the afternoon was Edward Asproth, chief refrigeration instructor at the Dunwoody Institute in Minneapolis. Mr. Asproth explained some of the problems encountered in the application of F-22. He also gave some

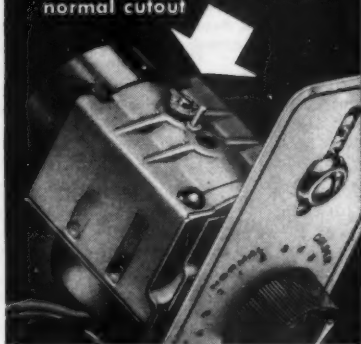
# FILLING ALL NEEDS

## The Cutler-Hammer Line of REFRIGERATION REPLACEMENT CONTROL

**This One Universal unit  
alone covers 60% of  
all needs.**



4 degree external differential adjustment either side of normal cutout



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### Adjustable Mounting Brackets

Maximum Mounting Centers..... 4-3/16

Minimum Mounting Centers..... 2-3/16

Adjustable Cutout Feature—Differential can be increased 4 degrees by turning indicator in "Hi" direction and decreased 4 degrees by turning in "Lo" direction.

Adjustable Range—Turning screw clockwise lowers settings and counter-clockwise raises settings.

Operating knob can be adjusted to meet various evaporator scale settings. New knob is ideal for varying shield thicknesses. Makes this control adaptable to wider range of single dial replacement jobs where overload is not required in unit.

The Cutler-Hammer line of Refrigeration Replacement Control will meet all the refrigeration serviceman's requirements. One Cutler-Hammer Control Unit alone... the Universal Replacement unit... will handle 60% of his needs. And where exact replacement control is needed, that item also will be found in the C-H Exact Replacement Control line... individually packed, clearly labelled, complete with dial plate, mounting screws, trim washers and full instructions for mounting and adjustment.

Behind this line are 50 years of control specialization and thorough knowledge of merchandising requirements. Thus, the line is recommended by outstanding refrigeration wholesalers from coast to coast and alert service organizations everywhere use it to reduce investment in stock, to insure regular and rapid turnover, faster completion of the job, and greater all-round satisfaction. CUTLER-HAMMER, Inc., 1363 St. Paul Ave., Milwaukee 1, Wisconsin.



**DOMESTIC, SEMI-COMMERCIAL AND COMMERCIAL CONTROL**



The four pictures, taken at the Illinois State Assn. Meeting, Oct. 1 and 2, show (1) newly elected officers, left to right, Chas. Fox, Sergeant-at-Arms; Ralph Porter, Treasurer; Bert Clark, Secretary; Les Sturch, 2nd V.P.; Francis Frazee, 1st V.P.; Wm. McCarley, President. (2) John Sackey receiving application of Kankakee Chapter for admittance to the State Assn. from J. E. O'Connor and B. B. Hursh, delegates from the chapter. (3) and (4) Part of the crowd around the manufacturers' conference tables.

interesting comparisons between F-22 and F-12.

A cocktail party was attended by about 150 of the members and their families in the Walnut Room of the St. Charles Hotel during the late afternoon. At 6:30 p.m. the annual banquet was held in the Community Center where everyone enjoyed a ham dinner served family style. 225 were in attendance. Following dinner, John Sackey, President of the state group, introduced Al Hunnecke, president of the St. Charles Chamber of Commerce. Mr. Hunnecke welcomed the membership to St. Charles and explained some of the city's attractions. International Secretary H. T. McDermott then conducted the installation of the new officers. Immediately following this, the Tri-County players under the auspices of the State Association Officers Training Committee directed by R. L. Hendrickson, presented a playlet in two acts entitled "How to (or not to) Run a Meeting." The players first presented a funny view of a chapter meeting where no rules of order were observed. The second act presented the proper way to conduct the same meeting. The party was then turned over to Herman Goldberg, and Herman put on one of his nationally famous parties. A fine floor show was pre-

sented, featuring several top-notch acts, followed by dancing until everyone was too tired to continue.

The Sunday morning session started off with a talk by Archie Robertson on "Future Plans of the RSES." He was followed by R. L. Hendrickson, Nickerson & Collins Co., on the subject "How to Profitably Promote Business Through Advertising." During the business session in which invitations for the next convention city were reviewed, D. D. Orr of the Chicago Chapter asked the cooperation of the state group in bringing the next International Convention to Chicago.

All in all, the entire session was a big success and a great deal of credit is due the convention committee headed by Willis Stafford, who worked so hard and diligently to bring about its success.

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#### "BILL" IRVING WITH DENNY

**W**. C. "BILL" IRVING has taken the position of service manager for Denny Brothers, Inc., Pasadena, California. Society members know Bill for the good work he did in RSES activities. A recent post he held was chairman of the International Standards Committee.



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*to fit..*

**FORGED FLARE NUTS  
AND FITTINGS**

*Prompt Shipment on most items*

**Electromatic**

2100 INDIANA AVE CHICAGO 16 ILLINOIS

# New England States Third Annual Convention Huge Success

**B**REAKING all attendance records, the New England States Association Third Annual Convention at the Hotel Bond in Hartford, Connecticut, November 8th and 9th showed the constant progress these chapters are making. Saturday, New England States Association officers and members conducted the usual business meeting. The Central Connecticut Chapters committee of 12 members and their wives headed by James Felix, president, also met to review the ladies program.

Sunday, after registering, the gents were escorted to the Egyptian Halls where at 10 o'clock the New England States Association meeting was opened by the president, William Tierney. Usual business, chapter reports, and election of 1948 officers was concluded at 12 o'clock. At 12:30 the Refrigeration Service Engineer's Society members again gathered and enjoyed 1½ hours of the most interesting topics and demonstrations which were: "Servicing Hermetic Units" by James Cargel, Springfield, Mass.; "Evacuating a System—Demonstration" by Charles Harris, Boston, Mass.; "Modern Trend of



Newly elected officers of New England State Association. They are, 1st row, left to right—A. W. Andreen, newly elected president. William Tierney, retiring president. 2nd row—John J. Madden, 1st Vice-President; Earl Walters, Secretary; George Martin, 3rd Vice-President; Charles Harris, International Vice-President. 3rd row—Walter Quimby, 4th Vice-President; Lee Wallace, 2nd Vice-President; Bob David, Chairman appointee. Charles Hughes, Treasurer, not shown in picture.

## 1948 NEW ENGLAND STATE OFFICERS

A. W. Andreen	President
John J. Madden	1st Vice-Pres.
Lee J. Wallace	2nd Vice-Pres.
George Martin	3rd Vice-Pres.
Walter Quimby	4th Vice-Pres.
Earl Walters	Secretary
Charles Hughes	Treasurer

## Board of Directors

James A. McCue	Francis L. Foley
William Paine	Thomas Spedding
James E. Felix	Charles J. Hughes
Alfred V. McGuire	Harvey Lockwood

## Board of Governors

Harold E. Lambert	Charles C. E. Harris
-------------------	----------------------

Merchandising" by John J. Spence, St. Louis, Mo.

The close attention and the terrific applause each speaker received, proved how each topic appealed to the gathering. At the close of the meeting the men adjourned to the Moorish Halls until 3 p. m. when dinner was served.

During this time, the ladies were the guests of the Central Connecticut Chapter. Each lady received a corsage upon entering the Old English Halls. Refreshments were served all morning, and at 12:30 one of the main attractions, Roy Douglas, Broadway famed ventriloquist was presented. At 1:30 sight-seeing buses took the ladies on a tour of the famous insurance center of the world, including a trip up to the Travelers Insurance Company observation tower, tallest building in New England.

At 3 p. m. all gathered in the Grand Ball Room and enjoyed a full course dinner of prime roast rib of beef.

Milton Kalischer, Westinghouse Engineer, opened the entertainment with a liquid air and Freon demonstration that amazed not only the men but the ladies as well. Roy Douglas, Ventriloquist, was put on again at the request of the ladies who enjoyed him immensely during the morning program. All agreed the ladies were right. Bob Molitor—known as the Old Timer in the vaudeville circuits throughout the country really



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**THERMOBANK**

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*Keeps Coils Frost-Free  
Automatically  
at Any Temperature  
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ATTENTION  
ELECTRIC HEATERS  
BRINE OR WATER SPRAYS

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**KRAMER TRENTON CO.** *Trenton, N. J.*

took the house. The feature attraction was Grippo, the envy of all masters of the art of magic and hypnotism. Four R.S.E.S. members and two members' wives volunteered to go on stage. What followed for an hour would fill a book. The old saying of "Laying them in the aisles" was just putting it mildly. His performance was unusual and very entertaining.

A 72 page program made all this possible with many thanks to the advertisers, Arthur W. Andreen, of East Hartford, was chairman of the Convention and John J. Madden of Boston, co-chairman. J. Madden will take over the Convention at Boston in 1948.

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### ORANGE COUNTY PICNIC

ON SEPTEMBER 21st, Orange County Chapter held its annual picnic at Irvine Park in Orange, Calif. In the years before, this picnic was a local affair, but this year it had the aspects of a state-wide get-together, with Orange County as host. From early morning breakfast until dark, the time was jam-packed with ball games, horseshoe pitching, contests and races. Food?

And How! Venison that was out of this world.

Breakfast was served from 7:30 to 9 o'clock, followed by a baseball game. Then there were the horseshoe games. In all games, the different chapters challenged each other. Dinner at noon with all the venison you could eat, and grand entertainment by the Marimba Merry-makers, a group of marimba playing children from Beverly Hills. There was a drawing for prizes. Numerous prizes were given, including a radio and a cocker spaniel puppy. The children had their sack races, tug of war, and other races. The men had tug of war, an egg tossing contest and races. The ladies contests included rolling pin throwing, nail driving and racing. Trophies were presented which will be passed on from year to year. Long Beach won the baseball game and the horseshoe events, and Orange County won the attendance record.

There was good chapter representation, with approximately 500 people. Members and guests attended from the following chapters: Orange County, Long Beach, Los Angeles, Hub, San Gabriel Valley, Arrowhead, Old Baldy, and Kern County.



These six photos were taken during the Orange County Chapter picnic held September 21.

NO WONDER

**KEROTEST**

VALVES

*.... serve so well!*

*.... cost you so little!*

Kerotest Valves and Fittings are precision engineered and precision made to give the kind of accurate and long lasting service your good reputation demands.

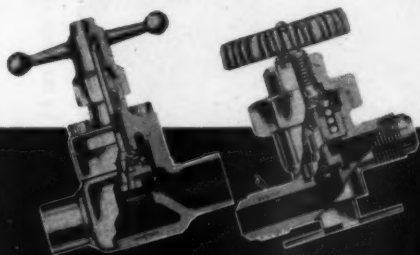
At Kerotest, every department is a precision shop where high accuracy machines guided by skilled craftsmen perform every operation *the best way*. Every part . . . every valve . . . every

fitting, must meet Kerotest's exacting quality standards . . . your assurance that every one will "serve so well."

Modern production methods make Kerotest Valves and Fittings economical, too. Kerotest wants to assure you a fair profit . . . your customer good value at a price he can afford. Next time you need valves, ask for and buy Kerotest

**KEROTEST MANUFACTURING CO**

PITTSBURGH 22, PA.



*See your*

**KEROTEST**

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AMERICA'S FIRST NAME IN QUALITY VALVES





The success of the third annual convention of the New England states association is indicated by the large attendance shown above at the dinner held during the meeting.



# SAVE FIGURING!



**You can find the right cooling unit in seconds  
with Marlo's new "Selectomatic" Charts!**

Marlo engineers have done all the tedious computing for you—boiled it down to a few easy-to-read charts that will save you countless hours and dollars. Now you can select the proper Marlo Industrial FUA or FUB Unit for any installation in less time that it takes to read this.

- ▶ Eliminate many causes of costly miscalculations
- ▶ Turn out more estimates faster, at lower cost
- ▶ Send for your **FREE** copies of these invaluable Marlo "Selectomatic" Charts today

**MARLO-HEAT TRANSFER**  
Since 1925

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**MARLO COIL CO. • ST. LOUIS 10, MO.**



The Oil Capital Chapter held its annual picnic October 11th with 80% of its membership in attendance. The entire group is pictured above. Horseshoe pitching, volley ball, football and bingo kept the crowd amused during the day.

### MARITIME CHAPTERS HOLD JOINT MEETING

**T**HE Maritime Chapters held a largely attended meeting in the Charlottetown Hotel, Charlottetown, P.E.I., September 27. A banquet, presided over by Norman Tait, St. John, was held during the evening. Mayor B. Earle MacDonald extended a welcome on behalf of the city, and the guest speaker of the evening was A. J. Pike, St. John, Interprovincial Association President. Mr.

Pike's subject was the aims and objects of the Society and some of the history and background of its growth. During the educational program of the afternoon, members and delegates from the Nova Scotia and the New Brunswick-Prince Edward Island Chapters heard an address given by Gordon Y. Dow, St. John, Educational Chairman of the New Brunswick chapter. Jack Hutchinson, Brantford, Ont., representative for Automatic Products Company, spoke on "Refrigeration Application," then a film entitled "Frosted Foods" was shown and enjoyed by the membership.

Mr. Tait expressed the thanks of the meeting to P. E. Palmer for his excellent work in arranging hotel accommodations and the meeting and banquet facilities. Following the banquet, Ken Richards gave several vocal selections.

§ § §

### Chapter Notes

● **AKRON CHAPTER, Akron, Ohio, Nov. 4**—The meeting was turned over to Mr. Simpson of Texas Oil Co., who presented a film on Arabian oil lands and the part they play in world oil industries. He was assisted by Messrs. Pilkey of the Cleveland, Ohio, branch and Evans of the Akron district.

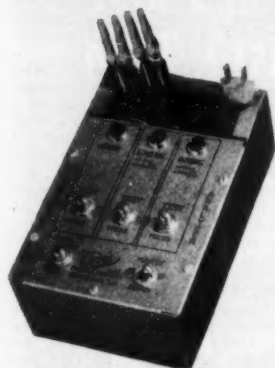
● **ATLANTA CHAPTER, Atlanta, Ga., Oct. 24**—John Spence of Hussmann Refrigeration, Inc., was the speaker of the evening on the educational program. He showed interesting movies on experiments being conducted at an



Pictured above is a view of those who sat down to a dinner during the joint meeting of the Maritime Chapters held September 27 in Charlottetown, P.E.I. Members from Nova Scotia and New Brunswick-Prince Edward Island Chapters attended.



# MORE PROFIT—LESS TIME



**SPECIFICATIONS**  
Size: 3" x 5" x 8"  
Weight: 1 3/4 pounds  
Price: **\$16.50**

*Annie*

## ANALYZE HERMETICS WITHOUT GUESSWORK

*Let Annie Do It!*

HERE IS A HERMETIC UNIT ANALYZER which, in a matter of seconds, will positively indicate the nature of any electrical defect.

REVERSES DIRECTION OF RUN  
PROVIDES MANUAL STARTING  
INDICATES OPEN OR GROUNDED FIELDS  
RELEASES STUCK OR FROZEN UNITS—  
Stuck units can frequently be freed by reversing the running direction.

**ACCURATE**—You can estimate closely without fear of having to take a loss

A "must" in any repair kit. Be sure you have it. Don't be embarrassed by your customer asking: "How do you know?"

## COLDSPOT REPLACEMENT COMPRESSOR PARTS . . .

A complete set of matched parts ready to assemble into the original housing—designed to fit all Coldspot compressors having 15/32 inch shafts.

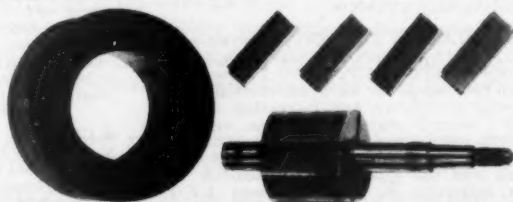
### SPECIFICATIONS

All wearing surfaces are tool-hard.

Available in 3 sizes—  
1" — 1 1/4" — 1 1/2"

### MATCHED SET INCLUDES:

- 1—Rotor
- 4—Vaness
- 1—Cylinder



SOLD THROUGH LEADING WHOLESALEERS.  
ORDER FROM YOUR REGULAR SUPPLIER,  
OR SEND DIRECT INCLUDING HIS NAME.

Matched Set Each **\$14.50** Lots of 3, each **\$13.80**

**MECHANICAL ENTERPRISES** DEPARTMENT 36

**4856 LANKERSHIM BLVD.**

**HOLLYWOOD, CAL.**

Ohio university on the preservation of fresh vegetables. The film was in color.

● **CENTRAL ARIZONA CHAPTER, Phoenix, Ariz., Oct. 13**—Bill Krack of Penn Electric Switch Co., gave an excellent talk on controls and their applications. Following this, all members were invited to partake of a Dutch lunch furnished by two wholesale houses—the State Equipment Co. and Arizona Refrigeration Supplies.

● **CENTRAL CONNECTICUT CHAPTER, Hartford, Conn., Oct.**—Tom Scott of Halstead and Mitchell, gave a very convincing talk on condensers and Remco Drier-Filters. President Felix gave a short talk on the New England States Association meeting in Hartford, Conn.

● **CENTRAL NEW YORK CHAPTER, Syracuse, N. Y., Nov. 11**—Guest speaker was A. H. Kasten of Haverly Electric Co., who outlined their forthcoming three-day service school and sales meeting, inviting all chapter members to attend. Mr. Kasten announced that several representatives of well known refrigeration manufacturing firms would speak. The Educational Committee reported Carrier Corporation and Onondaga Supply Co., Frigidaire Distributors, available for future program. The next session was a round table discussion of service problems. Gordon Johnson showed several reels of film on "Sports and Thrills" concluding with a Westinghouse film illustrating the trials and tribulations of a serviceman.

● **CENTRAL PENNSYLVANIA CHAPTER, Harrisburg, Pa.**—The charter presentation meeting was preceded by a dinner at which 54 of the 81 charter members were present. Temporary President Harper Kelly called the meeting to order and immediately turned it over to Secretary Frank Musser. Mr. Musser in turn introduced Charles C. E. Harris, International 2nd Vice-President, who proceeded with the charter presentation. In the course of this presentation, Mr. Harris gave an interesting discourse on the merits of membership and many of the activities engaged in by the Society.

● **CHARLESTON CHAPTER, Charleston, W. Va., Nov. 11**—Twelve members were present at this meeting and President Frame led an open discussion on ways and means of improving attendance and increasing membership. Several worthwhile ideas were presented, then the president appointed the chairmen of various committees. Chief among them was the Educational Committee with two assistants to plan programs for the future.

● **CLEVELAND CHAPTER, Cleveland, Ohio, Oct. 14**—The record attendance of 90 members and 15 guests made up this meeting. After a short business session the meeting was turned over to Elmer Weldwald who introduced representatives of Jack & Heintz Precision Industries. On the program presented by them a movie was shown and a talk given covering the method of manufacture of Jack & Heintz condensing units. Three

glass evaporators were used to demonstrate three different metering devices—expansion valve, high side float and capillary tube. It was a very interesting and educational evening and members of the Jack & Heintz company were thanked for the presentation.

● **COLUMBUS CHAPTER, Columbus, Ohio, Oct. 15**—It was decided during the business discussions that the chapter should put on a membership drive of 60 days' duration, with special emphasis being put on getting old members to return. At the end of this drive a party is to be held for all members. Mr. Yockey introduced the speaker of the evening, George Schuld from Cleveland, who gave an interesting talk on safety. Mr. Schuld recommended that a committee on safety be appointed within the chapter.

● **CORPUS CHRISTIE CHAPTER, Corpus Christie, Tex., Oct. 14**—There were 17 members and 28 visitors present at this meeting and in order that everyone become acquainted, each one was asked to rise and announce his name and address. A motion picture on "Repairing and Adjusting Expansion Valves and Repairing Leaks" was shown by Mr. Guilbert of the Nixon Studio. A vote of the membership approved the showing of more such educational films.

● **DAYTON CHAPTER, Dayton, Ohio, Nov. 13**—Horace I. Schmidt, a representative of Bush Coil Co., talked on the subject of coil selection. His talk was most interesting although curtailed due to lack of time.

● **FAIRFIELD COUNTY CHAPTER, Fairfield Co., Conn., Nov.**—An educational film was shown by the Dayton Rubber Co. on manufacture of belts, type of belts and uses of belts. A lively talk and discussion followed, lead by the Dayton Belt Co. representative. Ed Vogel gave a report and talk on the New England Assn. banquet at Hartford, November 9.

● **FURNITURE CITY CHAPTER, Grand Rapids, Mich., Oct. 7**—Harold Stamps of the Henry Valve Company, showed slides on their valves and dehydrators. Then Carl Picker of Mills Industries lead an informal discussion on Mills condensing units.

At the November 4th meeting, Mr. Whipples of Ranco, Inc., talked on controls and lead a lengthy discussion following the talk.

● **GRANITE STATE CHAPTER, Manchester, N. H., Oct. 14**—The meeting was preceded by a baked ham dinner, then following the rather lengthy business session, President Cobe introduced M. J. Meiklejohn of McIntire Connector Co., who gave an interesting talk on effects of moisture in refrigeration systems and best methods of combating moisture.

● **HOUSTON CHAPTER, Houston, Texas, Nov. 11**—During the course of the business conducted at this meeting, John H. Smith and Robert Crowe were nominated as delegates to the National Convention, with Mr. Smith being elected delegate and Mr. Crowe alternate.

**Your Equipment is  
NOT COMPLETE  
without . . . .**



## **THE MIDGET PURGER**

The Midget is the companion or sister product to the Little Giant Purger. The Little Giant, previously introduced, is for purging the larger units, but the Midget is a low cost, water cooled purger designed for economical operation for the smaller or fractional units up to 10 hp.

The Midget Purger provides positive and complete purging of the refrigerating system with minimum loss of refrigerant.

### **HERE ARE THE ADVANTAGES OF PURGING WITH THE MIDGET PURGER**

**THERE IS NO GUESSING**—By bleeding off the gases through the purge valve until the liquid rises to the top, you have a positive indication when purging is completed.

**MINIMUM REFRIGERANT LOSS**—The air in the system is completely separated from the refrigerant before the purge valve is opened.

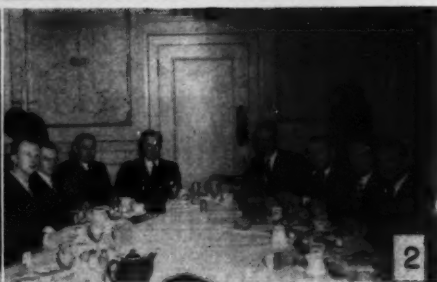
**SIMPLE TO OPERATE**—All operating valves easily accessible. Not necessary to check pressures or temperatures. No need to shut down the system.

**POWER SAVINGS**—Power savings, due to a reduction in head pressure will pay for the "MIDGET PURGER" many times over.

**MANUAL OPERATION**—Fully manually operated, there is no possibility of a slow leak developing which would cause a loss of refrigerant before the trouble is located.

**ORDER THROUGH  
YOUR WHOLESALE**

**MUELLER BRASS CO.**  
PORT HURON, MICHIGAN



#### CALIFORNIA COMMITTEE LAYS PLANS FOR SECOND CONFERENCE

Convention committee of the California Association meet to plan for 2nd Annual Western Refrigeration Educational Exhibit and Conference, Palace Hotel, San Francisco, April 30, May 1 and 2, 1948. (1) Pictured, left to right, with their chapter affiliation: Wm. R. Dougherty, Golden Gate; Merle Soden, Orange County, Educational Director, State Assn.; V. E. Denny, San Gabriel, Aust. Secy., State Assn.; David Fagg, Oakland, General Convention Chairman; J. P. Riley, Long Beach, State President; W. W. Allison, Los Angeles, International President; H. T. McDermott, International Secretary; W. E. Wharton, Oakland, Convention Chairman and Coordinator; H. J. Dike, Jr., Golden Gate; M. B. Willis, Golden Gate, Contract Chairman. Standing: Lloyd Thomas, Monterey. (2) Left to right: Harry E. Howard, Oakland; Eugene Larson, Golden Gate; Jesse Blair, Los Angeles; C. R. Rustin, Golden Gate, Publicity Chairman; Rowland Cooke, Golden Gate, State 1st Vice-President and General Arrangements Chairman; Lloyd Thomas, Monterey; Frank Dwyer, Golden Gate; M. R. Hanks, San Diego, State Treasurer; Ed Zlibin, Oakland. Photographs by Norman Overwesser, Monterey.

● **KANKAKEE VALLEY CHAPTER, Kankakee, Ill., Nov. 4**—Don Tomey and Dale Albright of Automatic Products Company presented a talk, illustrated with slides, on their products. The balance of the evening was devoted to business.

● **KEY CITY CHAPTER, Dubuque, Iowa, Nov. 5**—On the educational program, C. E. Rhoades spoke on "The Driver's Responsibility Law of Iowa." This was followed by John Schenk of the Alco Valve Co. on their products. He displayed a glass evaporator and showed the operation of their valves through this visual means.

● **LA CROSSE CHAPTER, La Crosse, Wis., Nov. 7**—T. O. Lester of the Kold-Hold Mfg. Co., gave an instructive talk on plate type evaporators to be used for freezing, holding and transporting perishables. The talk was followed by an open discussion and questions on the subject.

● **LITTLE EGYPT CHAPTER, West Frankfort, Ill., Nov. 5**—After the regular business meeting, President Louis T. Koehl turned the meeting over to Archy Falt, Illinois State Chapter Chairman, who gave a talk on the State Chapter and its activities. The meeting was then turned over to the Educational Committee who introduced Charles Brown of the Eutectic Welding Alloy Corp., who gave an interesting demonstration on alloy welding, how to weld copper to aluminum, brass to bronze and other difficult welding jobs at low temperatures.

● **LONG BEACH CHAPTER, Long Beach, Calif., Nov. 5**—A dinner preceded the meeting of the chapter at which wives of the members were guests of the monthly meeting. The dinner was served by Instructor Harold Phillips and his refrigeration class from City College School of Technology. Following the

dinner the ladies retired to their own meeting room where they proceeded to take the necessary steps to form an Auxiliary. Mrs. Edward Murphy was elected President, Mrs. J. Pat Riley was chosen as Vice-President, Mrs. Joe Mura was placed in the Secretary post, Mrs. Stewart Bell was elected Treasurer and Mrs. Tom Ringrose, Sergeant-at-Arms. The local group voted to affiliate with the National Society. This is the first such organization in California and it is expected that the other fifteen chapters will follow suit shortly. Long Beach also had the first chapter in the state of the men's organization.

In the business meeting, Robert Nichols gave the report on the final plans for the annual dinner-dance which is to be held in the Marine Room of the Wilton Hotel on December 13. Headline entertainment has been secured as well as Burl Uben and his orchestra for the dancing. Many visitors are expected from other chapters, as this affair has become one of the outstanding attractions of the Society. President L. K. Wills presided at the meeting. Following the business meeting, colored movies of the recent Southern California picnic were shown. That affair was held in Irvine Park in September and over 500 were in attendance. Al Haun took the pictures and showed them to a pleased audience.

● **METROPOLITAN NEW YORK CHAPTER, New York, N. Y., Oct. 24**—Mr. Segal, Chief Engineer of the Kramer Trenton Co., was the speaker on the educational program. He gave a detailed account of the history and development of the Thermobank system and through the use of slides and an operating model, thoroughly explained its operation.

● **MIAMI CHAPTER, Miami, Fla., Oct. 22**—Plans for a forthcoming Bar-B-Q were discussed at this meeting, with a number of the members volunteering their services as

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SERVICE ENGINEER

83

December, 1947



kitchen police and other duties in connection with the program. Mr. Nail gave a report on the proposed city ordinance pertaining to licensing of refrigeration servicemen, then J. J. Harris assumed the role of educational director and held a question and answer session. A Wiggins voltage tester was raffled off and the winner was President Turpin. Mr. Turpin presented the tester to J. J. Harris as a reward for making the 1946 dance such a big success.

● **MILE HIGH CHAPTER, Denver, Colo., Nov. 4**—A tour of the Lander's Packing Plant in Denver was made by 34 members. This packing plant was installed by Mitchell & Trautman and is considered one of the largest "Freon-12" packing plants in the country. It has two 50 hp. and one 25 hp. Carrier compressors in use. The tour was very interesting and educational and everyone who made it was very much impressed.

On November 11th instead of the regular business meeting, a hard time party and box supper was held at the Barnum Community Hall, attended by 42 people. The ladies brought a decorated box with supper for two and their boxes were auctioned off to the highest bidder. Prizes were given to the best decorated box, best hard time costumes and best waltzers. A door prize was also given away.

● **MIDLAND EMPIRE CHAPTER, Billings, Mont., Nov. 11**—A report was given on the events of the October state meeting held in Lewistown for the benefit of those members who were unable to attend. A complete account was given on the lecture given by O. C. Yates concerning heat pumps. An open forum discussion followed the report with some very interesting sidelights brought forth by guest J. Abrahamson, head of the Economics Div., Missouri Valley section of the Bureau of Reclamation. His comments brought home the terrific potential in heat pumps and the fact that future developments should bear close watching particularly by refrigeration service engineers. Mr. Abrahamson's comments were not to be construed as official from the United States Government but merely as an interested observer in the progress of reverse cycle refrigeration.

The main feature of the evening's entertainment was a fine presentation of colored slide pictures showing the diversified activities of Lynch Mfg. Co., with particular emphasis on the manufacture of PAR condensing units in addition to touching on the manufacture of their glass forming and package wrapping machinery. Wally Doepel, Western District Manager for Lynch, made the presentation.

● **OAKLAND CHAPTER, Oakland, Calif., Nov. 3**—This was designated as the first annual ladies' night. There were 82 members and their wives present, and a short business meeting was conducted during which nomination of officers took place. It was the consensus of opinion that Chairman Howard could well be proud of the success of this meeting and a vote of thanks was extended him for the swell job he had done. Miss Barbara L. Foot, Home Economist for the

Pacific Gas and Electric Company was the guest speaker of the evening. A four foot Crosley freezer was given to the lucky holder of the entrance ticket, who turned out to be Herb Smith of the California Refrigeration Co. of Oakland, Calif.

● **ONTARIO MAPLE LEAF CHAPTER, Toronto, Ont., Oct. 17**—A. E. Doan, Chairman of the Educational Committee, introduced Prof. Wilhelm of the University of Toronto, who spoke on the subject of "The Behavior of Various Metals under Extreme Low Temperatures." This was a very interesting lecture enjoyed by the entire membership. John E. Hutchison of Brantford, and Philip Hedrick of the same city, were elected to membership.

● **PENINSULA CHAPTER, Newport News, Va., Oct. 30**—The educational program for the evening was a sound motion picture by Virginia Smelting Company on servicing water valves, expansion valves and commercial controls.

At the November 13th meeting, Eugene Zepkin introduced Messrs. Underhill and Corbin of the Bush Coil Company, who provided a lengthy lecture on bare pipe coils of steel or copper, providing much of the application data when used in large plants in water or beverage cooling and various other applications. They discussed to some extent methods of baffling coils, the temperatures at which they should be operated, and means of obtaining the best air circulation. The meeting wound up with a talk on heat load factors and calculations.

● **PHILADELPHIA CHAPTER, Philadelphia, Pa., Oct.**—The speaker of the evening was Ed Flesch of the Henry Valve Co., who gave an interesting illustrated talk on Henry products and their construction. His demonstration of these products brought out some important features and was quite educational. The attendance of the meeting was 128 and 7 new members were accepted.

● **ROCKFORD CHAPTER, Rockford, Ill., Oct. 20**—The annual election of officers was held at this time with the following results: Charles McDermott, *President*; Ed Kruze, *1st Vice-President*; Robert Altenbern, *2nd Vice-President*; Earl J. Seaton, *Secretary*; LaVerne Jacobs, *Recording Secy.*; Charles Horizlak, *Treasurer*; and John Chapman, *Sergeant-at-Arms*. Board of Directors—L. L. Sturch, Gene Cassidy, James Hughes. Educational Chairman—V. R. Kruze. State Board Director—Earl J. Seaton. At the conclusion of the meeting a smorgasbord luncheon was served to members and guests.

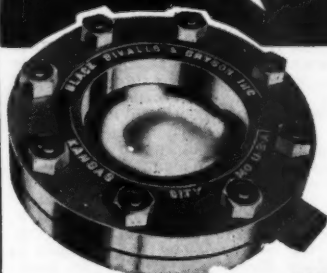
● **ST. LOUIS CHAPTER, St. Louis, Mo., Oct. 28**—The educational feature of the evening was a talk by Special Agent Joseph R. Connors of the F.B.I., who covered the activities of this splendid organization, citing famous cases from the time this Bureau was established to the present. He gave much credit to the loyal citizens of our country who co-operated with the Bureau in their investigations. Special Agent Connors answered questions from the floor and the participation of those present proved the intense interest in



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this talk. Attendance prize winners for the ladies were Mrs. G. C. Hunter, Mrs. Ralph Appel and Mrs. B. F. Street. Winners among the members were Richard H. Meyer, G. C. Hunter and Raymond Meyer.

● **SAN DIEGO CHAPTER, San Diego, Calif., Oct. 16**—A novel meeting was held in the form of a buffet supper. All members participated in games and prizes. This type of meeting showed more interest and enthusiasm than regular dinner meetings and will be used again. It was found that the supply houses are more willing to cooperate in getting members to attend these meetings. The topic for the after meeting lecture was the new germ killing rays that General Electric has produced.

● **SAN GABRIEL VALLEY CHAPTER, Pasadena, Calif., Nov. 6**—Forty members made an inspection trip through California Consumers Corp., 990 South Arroya Parkway, Pasadena, manufacturers of ice, packers of frozen foods and citrus juices, and cold storage. Guides were furnished and an explanation of all the operations of various equipment was given. It was an interesting and educational trip and enjoyed by everyone.

● **TOLEDO CHAPTER, Toledo, Ohio, Nov. 12**—Victor Van Vorce was nominated as delegate to the International Convention with John Horvath named as alternate. On the educational program, a representative of the Trane Company, La Crosse, Wis., gave a detailed lecture on atmosphere and causes for changes.

● **TRI-COUNTY CHAPTER, Joliet, Ill., Nov. 15**—After a good deal of discussion during the educational program, Messrs. McCarley and Anderson led a discussion on personal problems in refrigeration. After their talk, President May appointed a committee to look into the costs and possible location of the forthcoming annual banquet.

● **TWIN CITIES CHAPTER, Minneapolis, Minn., Nov. 4**—The members assembled at 7:00 p.m. in the dining room of the Dunwoody Institute for a steak dinner which preceded the meeting. After dinner, Chairman Asproth conducted the members on a tour through the Institute. The regular meeting got under way after the tour and during the course of the business session, President Asproth reported on the Illinois State Convention which he attended. On the educational program the film "Adjusting and Servicing a Snap-Action Valve and Two-Temperature Valves" was shown. The door prize of the evening was won by Dean Holmes.

● **VIRGINIA STATE ASSOCIATION, Nov. 15**—This entire meeting was devoted to business matters of the association, with committee reports being received from various groups and with some discussion on possible educational program for the chapters making up the state organization. Some plans for the convention in February, 1948, were discussed with a General Convention Committee, Finance Committee and Program Committee being appointed.

● **WESTCHESTER CHAPTER, Mt. Vernon, N. Y., Oct. 23**—After a short business session, the Educational Committee under the direction of Bob Nussman presented the Kramer Trenton Company who provided a display and lecture on the Thermobank system. There were 60 members and guests present for the meeting and all apparently had a good time. Michael Ferraro was elected President to fulfill the balance of the term of Ed Perley. Mr. Perley is unable to hold the office and wished to resign.

● **WINNIPEG CHAPTER, Winnipeg, Can., Oct. 17**—The annual election of officers took place at this meeting. Elected members are to take office January 1, 1948. They are as follows: Jim Gibson, *President*; F. P. Whalley, *1st Vice-President*; A. G. Lye, *2nd Vice-President*; F. G. Dowle, *Secretary*; C. Verity, *Treasurer*; A. McIntyre, *Sergeant-at-Arms*. Directors—A. J. Baillie, R. J. McWhirter and F. Fulford. Educational Chairman—H. Parker. Following the nominations, two sound films were shown, one on Repairing Leaks and the other on Adding and Removing Refrigerants.

● **WOLVERINE CHAPTER, Lansing, Mich., Nov. 10**—The chapter had two worthy visitors for the evening—one Mr. Kennell of Heatherwood Farms Dairy, and the other Mr. Harris from Michigan State Laboratory. On the educational program the members held a discussion on the questions and answers of the certificate examination.

● **WORCESTER CHAPTER, Worcester, Mass.**—Forty-seven members attended the New England States convention Sunday, November 9, in Hartford, Conn. Chapter President Foley arrived Saturday night and it took 24 hours to get the "dew" out of his car sufficiently to drive back to Leominster. Bob Shephardson of Standard Supply supplied a bus for the members who went Sunday morning. The bus broke down under the load conveniently near the Montrose Dairy. It was a good thing Wilrose Hanson decided to leave his little family at home. Al Moors and Pierce Goodney had no headaches (from the trip) as they traveled by train Saturday night. Bill Tierney did his recuperating ahead of time—he arrived Friday night and spent Saturday having breakfast in bed. The ladies all had a "brandy time"—flowers and everything. The very successful convention ended Sunday night and the bus had no trouble getting its normal load plus Al and Peg home safely.

\*\*\*

## SPECIAL CARS TO CLEVELAND

ARRANGEMENTS have been made with the New York Central System to assign special cars to Chicagoans and others attending the Cleveland Convention, at no extra charge for assignment to these cars.

Trains will leave Chicago at 11:10 p.m. Jan. 20; 2:30 p.m. and 11:10 p.m. Jan. 25. Contact Albert H. Fine, 185 North Wabash Ave., Chicago, Ill., for reservations as early as possible.

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*Building good will and increasing your service business is possible by taking Meter-Miser calls.*

Locating the leak and recharging is one of the services you can render to Meter-Miser owners if you have a supply of **HERVEEN**.

Customers and servicemen alike are finding this refrigerant meets their standards of performance when used in Meter-Miser units. When a loss of refrigerant has put the unit out of service, your job becomes a routine call with a supply of HERVEEN for your immediate use.

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Send for bulletin on "Procedure for Recharging Meter-Misers with HERVEEN"

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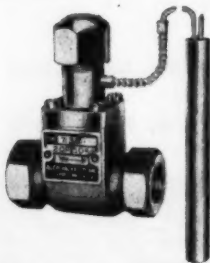


## NEW and IMPROVED EQUIPMENT

Information contained in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

### Alco Control

FOR the first time in the refrigeration industry, accurate temperature control has been provided within one small control unit. The device, which responds directly to actual load temperatures, needs no electrical wiring or accessories such as the conventional thermostat-solenoid combination.



The new control has been announced as the Type 732 Snap-Action Suction Valve by the Alco Valve Company, St. Louis, designers and manufacturers of automatic refrigerant control valves.

This valve is installed in the evaporator suction line and the remote or feeler bulb is located in the same way as a thermostat bulb. Since the valve is temperature-actuated within a narrow differential, the bulb should be located to pick up or reflect the average temperature of the refrigerated area. It is not ordinarily mounted on or near the evaporator.

The temperature range of the Type 732 is from 20 F. to 50 F. Adjustment to the desired temperature is provided by an adjustment stem and dial under the seal cap. The dial is marked with 1' graduations for close, accurate control, with the operating differential between "open" and "close" only 2'. This makes the 732 adapt-

able to many commercial applications such as beverage and drinking water coolers, display cases, vegetable storage, two-temperature jobs such as soda fountains, and many other installations requiring accurate temperature control.

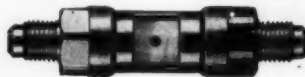
Automatic defrosting is obtained on the "off" cycle where the fixture temperature is above freezing. The narrow temperature differential of the control minimizes frost build-up by reducing the running or "on" periods, and reduces dehydration to a minimum.

Standard capillary tubing length is 5 ft. Nominal capacity is half a ton, Freon-12, or three fourths of a ton, methyl chloride. Line connections, both inlet and outlet, are  $\frac{1}{4}$ " F.P.T. The valve is only  $3\frac{3}{4}$ " high, weighing about two pounds.

Bulletin No. 732, giving complete description and installation instructions, will be furnished upon request by the manufacturer.

### Liquid Eye

HERE is a new type of liquid indicator called the Liquid Eye, made by Allin Manufacturing Co., Chicago, Ill. The name readily implies the correct meaning, and examination of the Liquid Eye shows the points of superiority over indicators of the past.



We can only point out some of the highlights of the Liquid Eye, such as streamlined construction, yet it is light and sturdy. Precision engineered, the Liquid Eye overcomes many obstacles encountered in the past. Notice

the large openings on both sides of the cylinder. See how easy it is to correctly observe the actual condition of the refrigerant charge.

To further improve the Liquid Eye watch the indicator on one side of the glass. When the line is full the indicator is magnified, whereas if the line is empty, the indicator remains unchanged—a feature worthy of notice all by itself because of the positive reaction.

Now, from a standpoint of safety, you find a pyrex tube of heavy wall thickness to withstand any refrigerant pressure encountered, also the added protection against temperature changes. Precision ground on both sides, it is mounted against pliable gaskets of a material impervious to the common refrigerants. Clearance of the glass has been added to the design to safeguard the Liquid Eye during shipment and installation. A good sized wall of brass protects the glass after it is installed.

The Liquid Eye can easily be mounted in any position to give accurate information with regard to the refrigerant charge.

When the Liquid Eye is used on your installation or charging board you have the feeling of a job well done. See it at your local jobber's. He has it in stock or will have soon.

### Terminal Block

FEATURING a dependable terminal "lock-in" arrangement which eliminates permanently the danger of spade lugs pulling out, a new terminal block has been developed for the electrical industry by Curtis Development & Mfg. Co., with factory in Milwaukee, Wisconsin.

This new block is provided



**CESCO's Healthguard Fume Kit** (No. 605) offers *triple protection* to refrigeration servicemen. Quick-change filter cartridges assure safety against ammonia, methyl-chloride and sulphur-dioxide fumes . . . *all in one convenient carrying case.*

The soft molded rubber face-piece of the fume mask, and the adjustable headgear assure a gastight, comfortable fit for every wearer. Large safety glass lenses give perfect visibility.

The CESCO Healthguard Kit provides *economical* protection because it is *moderately* priced.



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Arlington Seal**

Wise men use me because only my shoulder bone (ring) rotates with my contact (the shaft).

I can be installed easily and rapidly, saving man hours.

I am a uniform flat smooth seal with diaphragm synthetic rubber ring. All the way through I am made of the highest grade steel and bronze, precision finished to millionths of an inch.

All the better jobbers have me on their shelves or you can find out more about me by writing . . .

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YOUR SEAL

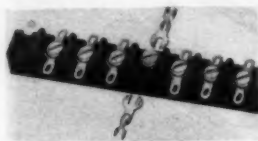
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SHOULDER SEAL  
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with solder-type spade lugs which are recessed into the body of the device. When the binder screws are tightened, each lug is held rigidly in place against a shoulder of the tough plastic material forming the terminal block.

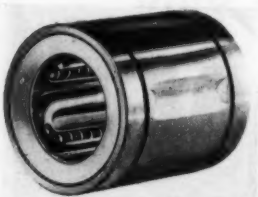


Terminals cannot pull out or drop out, it is said, but any terminal can be easily and quickly removed from this block or replaced simply by loosening the binder screw and lifting the lug out of its "lock-in" position. The screws are insulated to ground, as the base of the phenolic block is absolutely solid.

Designed to fit installations where space is of vital concern, this terminal block—factory assembled in any desired number of terminals from one to 18—gives the electrical man a feature that answers his need. According to specifications, a 10-terminal block, for example, is only 5 1/2" long, with overall height 3/4" and width, including the lugs, 13/16".

### Linear Ball Bearing

THOMSON INDUSTRIES, Inc., Manhasset, N. Y., announces the development of a new type unlimited travel anti-friction ball bearing for linear or reciprocating mo-



tion. This new product offers the engineer and designer advantages and economies comparable with those obtained with ball bearings in rotary motions.

The new bearings, called "Series A" Ball Bushings by the company, have been designed for high speed low cost production. The bearing

is a complete self-contained unit and has only three basic parts in addition to the balls. The first is a sleeve made of 52100 ball bearing steel, hardened and ground to close tolerances. Second is a pressed steel retainer which is fabricated in long continuous strips, cut off and rolled up to fit inside the sleeve. Third is a pair of rings which are pressed in the ends of the sleeve to position and secure the retainer to the sleeve.

"Series A" Ball Bushings are presently available for shafts having 1/4", 3/8", 1/2" and 1" diameter. In-between and larger sizes will become available as soon as the production tooling for them can be completed. Engineering data on the sizes now being produced is available upon request.

The new bearing has an extremely low friction coefficient which prevents cocking

and binding and its free rolling action maintains precision alignment by elimination of wear. Troublesome lubrication problems of plain sliding members are eliminated as Ball Bushings do not depend on the maintenance of an oil film over an exposed surface.

When used to replace bulky wheel and track arrangements, Ball Bushings enable the engineer to make important design economies, dimensional reductions and a clean appearance. By substituting for plain bearings, the designer can frequently scale down the size of an entire mechanism as anti-friction bearings in place of sliding members permit lower length to diameter ratios while the reduced friction allows higher operating speeds and smaller drive motors, gears, linkages and associated parts.

### Water Cooler

A NEW self-contained, 10 gallon capacity drinking water cooler, featuring an all stainless steel top and drain assembly and an automatic water-flow regulator, is now being manufactured by Tempprite Products Corporation, 47 Piquette Avenue, Detroit 2, Michigan.

Top and drain assembly is constructed of 18-8 stainless steel and incorporates an anti-splash guard. The bubbler was designed to give maximum sanitary protection. It is impossible for the user's lips to come into direct contact with the water nozzle. Waste water will fall only into the basin; not on the nozzle, the manufacturer states.

Water flow is automatically regulated to provide a stream of drinking water without annoying fluctuations. This constant rate of flow is said to be unaffected by outside water pressure variations.

Cooler and storage tank are constructed of 18-8 stainless steel. Water is directed to the bottom of the cooler and leaves through the top, eliminating any possibility of trapped air in the system, it is claimed. The storage tank design is said to prevent cooler damage in the event of an accidental freeze-up. Cooler and storage tank are sealed in an insulated cab-

inet, protected against moisture.

The Tempprite Cooler may be obtained with either hermetic or open type condensing units to handle special or unusual applications. A glass-filler attachment is available



as optional equipment. All models meet the requirements of Commercial Standard CS-127-45, as issued by the National Bureau of Standards, U. S. Dept. of Commerce.



**GET THE JOB OPERATING**

***FASTER!***



**NEW  
Premier Kit  
RECONDITIONS  
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**VALVE PORTS IN MINUTES!**

Now you can easily grind, finish and test recessed or flush valve seats (either piston or flapper jobs) . . . get 'em back into action faster . . . and make satisfied customers! No more tiresome hand-lapping.

**COMPLETE SET PACKED  
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Contains self-aligning tool holder, 6 abrasive wheels for roughing, 6 cast iron lapping disks, two 3" cast iron lapping blocks, 1 wheel dresser and 1 valve tester. Complete instructions enclosed for handling 1/2" to 1 1/4" valve seats.

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**A PROFITABLE  
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● Every owner of a home freezer needs this signaling device to insure quick warning of mechanical failures. Every day more freezers are being serviced in your area. You do the servicing. You know the owners. They need the Freezer Sentry.

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A package item. Installed in two minutes.

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A drop of mercury makes the contact.

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Immediate delivery. Write today for descriptive material and price sheet.

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## LYNCH CORP. REORGANIZES

**A**T A special meeting of shareholders of Lynch Corporation held at its general office, Anderson, Indiana, November 13, it was voted by an overwhelming majority to ratify the plan of merger submitted by the Board of Directors.

The plan merges the four wholly owned subsidiaries, namely; Wiley & Lett, Inc., Lynch Manufacturing Corporation, Lynch Package Machinery Corporation and The Toledo General Investment Company, into the parent company, Lynch Corporation, as of the close of business December 31. It does not in any way affect the outstanding stock of Lynch Corporation consisting of 450,000 shares of common stock owned by some 1,800 shareholders.

Henceforth Lynch Corporation will operate its five plants, two in Anderson, Indiana and one each in Marion, Indiana, Defiance, Ohio and Toledo, Ohio, as one corporation, but with three separate divisions, namely: Glass Machinery Division, Par Compressor Division, and Package Machinery Division.

Executive and general offices of the corporation will be at Anderson, Indiana.

Sales offices of the Glass Machinery Division will be located at Anderson, Indiana. Sales offices of the Par Compressor Division and the Package Machinery Division will be located at Toledo, Ohio.

Plant Management, Engineering and Purchasing for the respective plants will be attached to each individual plant.

The merger does not contemplate any change in the directorate or executive personnel. T. C. Werbe, Sr. continues as President of the corporation, M. H. Pendergast as Executive Vice President and General Manager, and J. L. Watts as Secretary and Treasurer. F. K. Zimmerman, formerly Treasurer of all the subsidiaries with offices at Toledo, Ohio, was elected to the new post of Controller of the corporation, with headquarters in the general offices at Anderson, Indiana.

A. G. Doll, a Vice President, will be in charge of sales of the Glass Machinery Division, R. L. Sears will be Director of Sales of the Par Compressor Division, manufacturers of Par Air Compressors and Par Condens-

ing Units. M. V. Girkins will be Director of Sales and T. C. Werbe, Jr., Sales Manager of the Package Machinery Division, manufacturers of Wrap-O-Matic Wrapping Machines and Mopac Packaging Machines.

J. P. McCarthy will continue to direct the manufacturing operations of the Ohio plants, T. A. Wiley, the Marion plant, G. L. Brown, the Anderson plant, and C. Yates, the foundry at Anderson.

With the volume of business currently running two and one half times that of pre-war, the merger will effect many worthwhile economies of operation.

\*\*\*

## NEWARK FIRM FILES TO REORGANIZE

**A**ERICAN Coils Company, manufacturer of refrigeration and radiation coils, 360 Thomas Street, Newark, N. J., recently filed in Federal Court, proceedings to reorganize under provisions of the National Bankruptcy Act, through its attorney, Max L. Rosenstein.

Andrew B. Crummy, Newark lawyer, and Thomas W. Binder, the company's president, were appointed trustees by Judge William F. Smith. The concern states its current liabilities total \$257,647 with assets of \$947,989.

\*\*\*

## U.E.I. EXPANDING TRAINING

**B**ECAUSE of the need for technical training between the high school and college levels, Utilities Engineering Institute of Chicago has announced enlargement of its technical resident refrigeration school. According to D. F. Burroughs, Educational Director of U.E.I., the course is designed to bridge the gap between highly specialized engineering technology and simple maintenance and repair training.

"The refrigeration industry," states Mr. Burroughs, "need men who are qualified to handle operations other than the mechanic level. There are many such men today who have ability above average; on the other hand, their lack of academic training in basic science has been a handicap. Although U.E.I. does not attempt to offer



**TIME TELLS THE STORY...**  
 Users everywhere praise the performance of Sanitary Quicfrez. And remember, thousands of Sanitary freezers were in use before Pearl Harbor.  
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**SANITARY REFRIGERATOR COMPANY**  
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**SANITARY Quicfrez**

## How many people drink WATER?

ALL OF US, of course—but drinking facilities are often so inadequate, or on such a hit-or-miss basis, that you'd think thirst-relief was of little importance. There's a big, profitable, wide-open market for water coolers *today*—meeting the fast-growing recognition of the need for cool, clean, clear drinking water in plants, stores, offices, schools, theaters, and so on. Put all the profit advantages in your favor by selling Oasis Electric Water Coolers. Made by EBCO, world's largest manufacturer of electric drinking water coolers, they give you the best features for pleasant, easy drinking, lasting efficiency, and low-cost operation. Models for every need. Write for details.



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 401 W. Town St., Columbus 8, Ohio

MODEL OP-10  
 Warranted  
 for 5 years

graduate engineering degrees to these men, it does feel that there is a definite need for training designed to give the individual a sound technical background. Therefore, our training has been balanced accordingly, emphasizing the correlation between theory and shop practice. Physics, mathematics, mechanical drawing, blueprint reading, laboratory experiments, and refrigeration theory are combined with standard practices in refrigeration field procedures."

The next section of U.E.I. refrigeration resident technical training is scheduled to start January 5, 1948. Both day and night classes are open for enrollment. Further information can be obtained from the Registrar, Utilities Engineering Institute, 2525 North Sheffield, Chicago 14, Illinois.

\*\*\*

### GEORGE WILSON TO ESTABLISH HIS OWN AGENCY

**G**EORGE W. WILSON, for the past 4 years in charge of jobber sales for Henry Valve Co., Chicago, has resigned in order to establish his own business as manufacturers' representative. Mr. Wilson, who plans to handle only products sold through heating and refrigeration jobbers, will travel Northern Illinois, Eastern Iowa, Wisconsin and a portion of Indiana. This territory is more commonly referred to as Chicagoland.

Previous to his joining the Henry organization, Mr. Wilson was associated for twelve years in a sales capacity with Revere Copper and Brass Co.



G. W. WILSON

\*\*\*

### REFRIGERATION, INC., MOVES TO LARGER QUARTERS

**R**EFRIGERATION, Inc., wholesalers, recently moved to larger quarters at 20 Ryan Court, Springfield, Mass. The company was recently reorganized and the new officers are: A. W. Towson, President, J. A. Towson, Vice President, and C. Towson, Director.

Arthur Towson announces that the com-

pany plans to increase its activities by taking on a line of oil burner supplies and accessories.

\*\*\*

### SIEGFRIED ELECTED V.P. OF SUPERIOR VALVE & FITTINGS

**W**ILLIS A. Siegfried was elected Oct. 18, to the office of Vice-President and General Manager of Superior Valve and Fittings Co. In that capacity he will be first assistant to the President.

Mr. Siegfried joined the company as Assistant to the Sales Manager in the summer of 1944. In April of 1945 he was made Sales Manager and succeeded to the office of Vice-President in Charge of Sales in April of 1946.



W. A. SIEGFRIED

\*\*\*

### WAGNER BRANCH MANAGER

**W**AGNER Electric Corporation announces the appointment of M. E. Comstock as Manager of its Electrical Division Branch Office in Boston. Mr. Comstock has been with the company since 1919; prior to his appointment he held the position of Sales Engineer for 28 years. The Boston Branch serves the New England territory, including Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and that portion of Connecticut east of the Connecticut River.

The company also announces that effective October 1, its Tulsa Sub-office is being transferred from the Houston Branch Office Territory to the Kansas City Branch Office Territory. H. M. Furtney, who recently joined the Wagner organization, will be in charge of the Tulsa Sub-office. A. W. Maas,



M. E. COMSTOCK



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**BEN-HUR**  
FARM & HOME FREEZER  
to fit **EVERY**  
Family's Need...

"SIX" "EIGHTEEN" "NINE"  
"TWELVE AND A HALF"

Each is an engineering triumph in cabinet beauty, dependable food protection, operating economy, trouble-free performance, and "lifetime" satisfaction.

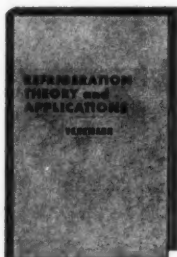
Write for technical details and sales advantages.

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### THE AUTHOR

Well known in refrigeration circles as a recognized authority on the practical applications and theory of refrigeration, H. G. Venemann, Professor of Refrigeration in the school of Mechanical Engineering, Purdue University, has revised his original text and rewritten much of the material in this second edition.

### REFRIGERATION THEORY and APPLICATIONS

(Second Edition)

A book written for the *installation, service, and sales* engineer on the basic principles and applications of refrigeration processes. Equip yourself with a thorough knowledge and understanding of these pertinent facts.

This new book includes refrigeration **THEORY-APPLICATIONS** and **PRACTICAL** examples set down in easy to understand language for both the student and engineer. A thorough understanding of these subjects will help you to diagnose and correct conditions, operate and design efficient installations.

No other book offers such a comprehensive treatise on the refrigeration theory as applied to the practical uses and applications. An indispensable reference for the student; engineer and practical man.

**\$400**  
postpaid

**NICKERSON & COLLINS CO., 435 N. WALLER AVE., CHICAGO 44**

formerly at Tulsa, has been transferred to the Philadelphia Branch Office.

Harry Anderson has joined the sales force of the company's Minneapolis Branch Office.

§ § §

### HUGO C. SMITH JOINS KRAMER TRENTON SALES STAFF

**T**HE Kramer Trenton Company of Trenton, New Jersey has appointed Hugo C. Smith sales representative in Ohio, West Virginia, and Eastern Michigan, with headquarters in the N.B.C. Building, Cleveland, Ohio.

Mr. Smith brings to this post a background of 20 years experience in the refrigeration field, including association with Frigidaire, Carrier, and Alco.

§ § §

### TENNEY EXPANDS

**A**CQUISITION of additional production facilities has just been announced by Tenney Engineering, Inc., 26 Avenue B, Newark 6, N. J., manufacturers of thermostatic expansion valves, cooling units, mullion units, finned coils and other types of refrigeration equipment, and automatic temperature, humidity and pressure control equipment.

The additional space acquired will be used for construction and storage of bulky units in the Tenney line, permitting the use of more space in the original premises for manufacture.

§ § §

### LEGLER TO DEARBORN MOTORS

**A**PPPOINTMENT of Joseph B. Legler, former General Motors and Nash-Kelvinator service and sales executive, as national service manager of Dearborn Motors Corporation, Detroit, was announced by Merritt D. Hill, general sales manager.

Legler will direct service sales and training activities for Dearborn's 37 distributors and 3,000 Ford tractor dealers in the United States, Canada, Alaska, Hawaii, Mexico and Cuba.

For the past seven years Legler has been with the Kelvinator division of Nash-Kel-



J. B. LEGLER

vinator as parts and commercial sales manager. Prior to that he was with Ohio Edison for six years first as service and commercial sales manager, later as refrigeration and range sales manager. With the Frigidaire Division of General Motors Corporation for eight years, Legler served in various service and sales capacities.

§ § §

### ACE CABINET OPEN HOUSE

**A**LEX UNGER, President of Ace Cabinet Corp., of New Bedford, Mass., announces "Open House" to be held at the new plant on December 15th and 16th, 1947. All distributors, ice cream manufacturers and dealers are invited.

"Straight line production" with improved engineering developments will be featured. New products now in production will be on display. Special meetings will be held to explain all new developments.

The meeting will be climaxed by a banquet on Tuesday evening. The entire program will be under the direction of Nelson S. Bloomenstien.

§ § §

### A. A. RICKER MADE ASSISTANT TO PRESIDENT OF JACK & HEINTZ

**A**LBERT A. RICKER, Vice President in Charge of Finance, has been appointed to the newly-created position of Assistant to the President of Jack & Heintz Precision Industries, Inc., Cleveland, Ohio, Byron C. Foy, President, announced today.

Mr. Ricker, Comptroller of the New York World's Fair from 1939 to 1940, joined the firm of Arthur Andersen & Co., certified public accountants, in the latter year. In April, 1941, he entered the management of Cramp Shipbuilding Co. as Comptroller and was subsequently elected Vice President of that company.

Mr. Ricker became Vice President in Charge of Finance of Jack & Heintz Precision Industries, in March, 1946, when the Company was formed by the merger of Jack & Heintz, Inc., into Precision Products Corporation. He will retain that position



ALBERT A. RICKER



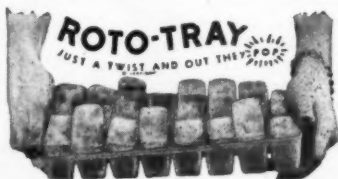
## ONE COMBINED COURSE

covering the THEORY and PRACTICE of REFRIGERATION, AIR CONDITIONING and HEATING is now available for servicemen, salesmen, layout men, estimators and all those others associated with or who would like to become associated with these businesses.

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Replacing old fashioned ice cube trays because of its many advantages.

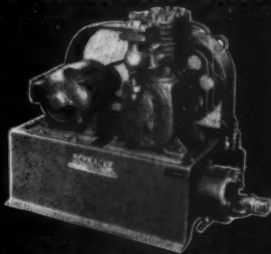
- INSTANT RELEASE of cubes with a slight twist of the tray, no running water necessary.
- NO FORCING to remove the tray from evaporator.
- NO WASTE—remove one or any number of cubes desired.
- FLEXIBLE at all required temperatures.

The ROTO TRAY is now being used by many refrigerator manufacturers.

A Patented Development of

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**THE INDUSTRY'S MOST**  
*Easily* SERVICED UNITS

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- Powerful, portable, compact • Delivers high voltage that really kicks 'em over • Simple, speedy operation • Snap-action controls • Color-coded 3 wire cable clips on Hermetic unit
- Full instructions included • Six inch square attractive metal cabinet • Plugs into 110V. AC.

Complete \$27.50

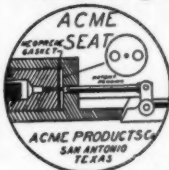
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\*Pat. Pending

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**SERVICE MEN: Don't Bother to  
Reface Frigidaire L/S Floats**

**USE ACME  
REPLACEMENT  
SEATS**



No Special Tools required. Simple—Easy—Dependable.

Ask your Jobber or write for Sample.

**ACME PRODUCTS CO.**  
P. O. Box 1956, San Antonio 6, Texas

while fulfilling his new duties as Assistant to the President, Mr. Foy said.

Two other announcements of personnel additions were made recently.

Frank R. Kohnstamm, nationally-known sales executive who for 25 years was associated with Westinghouse Electric Corp. in Cleveland and Mansfield, Ohio, has joined the staff of Jack & Heintz Precision Industries, Inc., as General Sales Manager.



F. R. KOHNSTAMM



HAROLD R. BURT

Resigning from Westinghouse in 1942, Mr. Kohnstamm became executive vice president of the Vander Horst Corp. of America, operating plants in Lakewood, Ohio, and Olean, N. Y. In 1944 he joined Baldwin Locomotive Works, with which company he filled executive positions in both San Francisco and Philadelphia, resigning as manager of the Testing Equipment Division to take up his new duties with Jack & Heintz.

Harold R. (Doc) Burt, sales and service engineer of Oakland, Calif., has been engaged by Jack & Heintz Precision Industries, Inc., as Western District Sales and Service Representative of the Electric Motor and Refrigeration Divisions.

Maintaining headquarters in Oakland, Mr. Burt will be charged with primary responsibility for Jack & Heintz motor and refrigeration condensing unit accounts in eleven Western states.

§ § §

#### G.E. PERSONNEL CHANGES

**G**EORGE E. SIMONS, advertising manager of General Electric's Air Conditioning Department, has been named head of community and employee relations in addition to his present duties, G. R. Prout, vice president and general manager of the G.E. department, has announced.

K. K. Cooper has been appointed Assistant Designing Engineer of General Elec-

tric's commercial refrigeration machine division, and J. B. Settle has been made section engineer in charge of sealed type compressors and condensing units, according to T. C. Johnson, Engineer of the division.

D. C. McKinley has been placed in charge of sales of General Electric air conditioning and refrigeration equipment in the New York District, and Fred H. Guterman has been named District Representative in the Philadelphia area.

§ § §

#### CALIFORNIA DISTRIBUTING CO. FORMED ON WEST COAST

**T.** F. RHOY announces the formation of the California Distributing Co. for the purpose of distributing at wholesale only, commercial and domestic refrigeration equipment and allied products throughout Northern California. Their offices and showrooms will be located at 2201 E. 14th Street, one of the main thoroughfares in Oakland.

Mr. Rhoy, more frequently called Fred, will head the new company. He is well known to the refrigeration trade in Northern California, having been a partner of the Western Refrigeration Company which was recently dissolved.

The personnel in the new organization is practically unchanged and Lem Branson will continue in the capacity of Sales Manager.

The California Distributing Co. will maintain a policy of selling on a strictly wholesale basis and will not in any way compete with the dealers it serves. Ample stocks of top quality merchandise will be carried, thus affording prompt service and complete dealer satisfaction. The entire territory of Northern California which includes 50 counties and Reno, Nevada, will be covered as in the past by salesmen who live in their respective territories. This assures the company and the manufacturers they represent, complete controlled coverage.

California Distributing Co. distributes the products of such manufacturers as: Victor Products Corp., C. L. Percival Co., Revco, Inc., Paley Mfg. Co., Merchant & Evans Co.,



T. F. RHOY



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A combination UNIT STARTER, ANALYZER, and AMMETER the GAMMETER\*, specially designed to start up and test HERMETIC and OPEN TYPE units.

*In one compact, portable instrument, only Gammeter\* gives you—*

- Direct Manual Starting of Unit
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- Tests for Open Circuits
- Speedy, Snap-Action Operation

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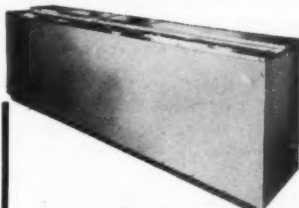
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Refrigerator Door Gaskets  
Are Again Made From  
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**Always Demand These  
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## INTRODUCING! SOMETHING NEW

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**Descriptive Circular on Request  
SHAWNEE PRODUCTS, INC.**

LIMA

OHIO

Lehigh Foundries, Refrigeration Engineering Co., and others.

§ § §

### KRANTZ WITH RIGIDBILT

**A**PPPOINTMENT of H. F. Krantz as general sales manager of Rigidbilt, Inc. has been announced by W. W. Bradfield, president of the company. He will direct sales of Rigidbilt air-conditioning and steam heating coils, unit coolers, floor type product coolers, and other catalog items. In addition, he will have final responsibility for the sale of custom-built units designed and fabricated for special needs.



H. F. KRANTZ

Mr. Krantz comes to Rigidbilt from the position of mid-western representative of the Electric Power Equipment Corporation, Philadelphia. A graduate of the Illinois Institute of Technology, he served as an engineer with the Navy Department in Washington, D. C., until the outbreak of the war. Commissioned as a Naval Officer, he spent two and one-half years in submarine service aboard the U.S.S. Lapon in the Southwest Pacific. His broad technical experience and previous sales activity have equipped him well for his new responsibilities.

§ § §

### NEW CATALOGS AND BULLETINS

H. W. BLYTHE COMPANY, Chicago, announces publication of a new refrigeration parts catalog, containing 88 pages of up-to-the-minute data on refrigeration needs.

Including complete lines of foremost manufacturers, the book is exceptionally well arranged. List prices are shown throughout, providing trade protection for installation contractors and service engineers. A large 8-page index provides quick access to listings. Sectional arrangement of con-



densing units, compressor parts, coils, valves, dehydrators, tools and fittings, lends itself to easy selection of individual items.

Most striking of all, from the standpoint of refrigeration catalog artistry, is the modernistic cover. Accomplished by one of Chicago's leading cover artists, it depicts a condensing unit atop a pedestal as a foreground for a less imposing, yet highly attractive arrangement of miscellaneous refrigeration equipment and parts.

A copy of the catalog may be secured by writing on your letterhead to H. W. Blythe Co., 2334 South Michigan Ave., Chicago 16, Illinois.

THE SERVICE PARTS CO., 2511 Lake St., Melrose Park, Illinois, have just released their 47-B-1947 fall catalog. They have added a complete line of oil burners and oil burner parts, electric range units and other heating supplies to the refrigeration, air conditioning and shop equipment already carried. The catalog also contains much valuable engineering data.

UNITED STATES RUBBER COMPANY is distributing a new V-belt catalog containing comparison tables, selection data and other detailed information on V-belts for electric refrigerators, home workshop equipment, ironers, farm appliances, oil burners, stokers, lawn mowers, power tools and water and gasoline pumps and other devices.

For a copy of the catalog, write to mechanical goods division, United States Rubber Company, 1230 Avenue of the Americas, New York 20, N. Y.

HIGHSIDE CHEMICALS COMPANY have issued a new Thawzone manual which gives the theory and practice in the application of Thawzone to eliminate moisture troubles in refrigerating systems. The manual will be distributed shortly to wholesalers and their customers. Those wishing to receive a copy may write the company at 195 Verona Ave., Newark 4, N. J.

REFRIGERATION ECONOMICS COMPANY, 1231 Tuscarawas St. E., Canton 2, Ohio, have issued a new 35-page catalog, 47-1, together with a separate price list of Recoy products. Some of the products covered in the catalog are Type CSC shell and coil liquid coolers, coolant coolers for machine tools and hydraulic oil, freeze-proof water and brine cooling units, shell and tube, also shell and coil condensers. Complete engineering data and specifications are provided on each.



## TINIT

**makes tough  
jobs easy!**

Tinit cleans and tins stainless steel, black iron, hard-drawn copper and all metals in one easy operation. Used successfully for 18 years. Sold by automotive, refrigeration service, tinning supply and other jobbers.

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### AVAILABLE NOW For Immediate Shipment **COPPER DEHYDRATORS**



2" O.D. Copper Tubing—  
with  $\frac{1}{4}$ " &  $\frac{3}{8}$ " Flare Fittings. Ends—Brass Forgings with large hexagon area for **Easy Service Mounting**. Copper Tube sweat fitted to forging. Brass screens and felt filter.  
1" O.D.—Spun End Copper Tube—Brass End Fittings properly proportioned and silver soldered. Brass screens and felt filter.

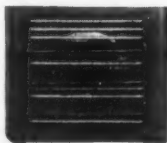
**IF YOUR JOBBER DOESN'T STOCK—WRITE US**

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### PROMPT DELIVERY

*on Rempe*



### Overhead BLOWER UNITS

PROMPT DELIVERY can now be made on all Rempe Overhead Blower Units for low temperature cooling. Have the correct volume of cold air for your every service. Sturdily built of bonderized steel; coils of tinned copper or seamless steel tubing; well insulated; individually adjustable louvers.

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Illustrated, 12 page catalog shows instantly the correct blower for every possible duty: "How to Select the Proper Unit"; "Type of Unit to be Used for Various Room Temperatures"; etc. *Write today on your letterhead.*

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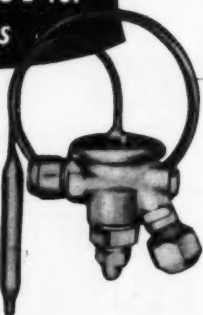
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Manufacturers of: Ice Cream Dispensing Cabinets—Upright Ice Cream Storage Cabinets—Home and Farm Freezers—Frozen Food Display Cabinets—Cream Soda Fountains—Bottles and Sandwich Units.



Available in:  
Double Row—4, 6, 8, 12.  
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Self-contained and remote types.



Also producing  
**Stainless Steel Shells**  
in all models

**GASKETS**

**GASKETS**

• Play safe and specify **CHICAGO-WILCOX** gaskets for every refrigeration need. Our complete gasket service provides a dependable source of supply to meet your requirements. Get full details today.

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**IT'S EASY TO  
SPOT WHAT'S  
WRONG**

With this vestpocket Calculator you can quickly determine the correct head pressure when the suction pressure and refrigerant are known.

**POSTPAID \$1.00**

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## AIR CONDITIONING

**HERBERT HERKIMER, M.E.**  
*Director Herkimer Institute  
of Mechanical Trades,*

and  
**HAROLD HERKIMER, M.E.**  
*Design Engineer and Project Manager  
Raisler Corp., N. Y.*

Here is an indispensable book for engineers and other workers engaged in this ever-growing industry. The object of the book is to provide all the required information on every phase of air conditioning, e.g., estimation, sales, production, installation, supervision, service, etc. It reviews the laws of chemistry and physics associated with air conditioning, and then goes on to the practical aspects of the industry, such as equipment, materials and costs.

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Gas Laws, Physical and Chemical States of Matter, Change of State, Heat Transfer, Heat Transmission of Building Materials, Heat Transmission Factors in Cooling, Radiant Heating, Elementary Thermodynamics, Air and Vapor Mixtures, Dynamics, Elements of Health and Comfort, Fans, Ducts and Air Distribution, Heating Load, Cooling Load, Dehumidification and Humidification, Spray Systems and Cooling Towers, Drying Systems, Cooling Methods and Refrigeration, Unit Air Conditioners, Central Systems, Auditorium Cooling and By-pass System, Industrial Air Conditioning Summary, Automatic Controls, Estimating Costs, Appendix, Abbreviations, Symbols, Conversion Table, Index.

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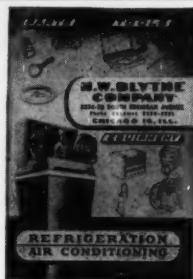


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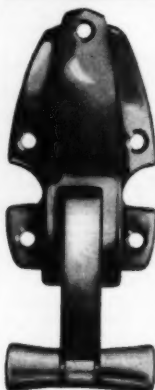
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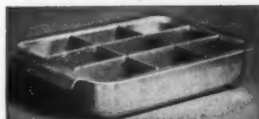
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# VOLUME INDEX

January to December, 1947

Volume Fifteen

TO facilitate the location of articles which have appeared in THE REFRIGERATION SERVICE ENGINEER, this index is a regular feature in each December issue, serving as a ready reference to the articles which have appeared in the preceding twelve issues. The figure following the date of issue refers to the page on which the article will be found.

## A

- Accuracy of Control Features Sub-Zero Test Cabinet .....Oct.—38
- Admiral Dual Temp. Construction and Operation of .....Oct.—34, Nov.—44
- Air Conditioned Buses in San Antonio .....June—64
- Conditioning Application Simplified .....Oct.—58
- Conditioning Loads, Simplified Calculation of, by *Edward Davis* .....July—44
- Conditioning Systems, Charging and Starting, by *Joel N. Calhoun and F. M. Mayse* .....Jan.—35
- Questions and Comments on .....Feb.—41
- All-Industry Show to be Held Every Two Years .....Feb.—50
- ASRE Issues Home Freezer Pamphlet .....June—86
- Issues Pamphlet on Hospital Air Conditioning .....Aug.—82
- Spring Meeting .....Apr.—54
- Ammonia Compressors, Construction and Service of, by *W. G. McBride* .....Apr.—31
- Answers to Freezer Questions .....Apr.—48
- Appliance Display in Bank .....May—48
- Army Ice Cream Plant, by *Oliver Rolfe* .....Aug.—38
- ASND. of Air Conditioning Men Formed .....Aug.—86

## B

- Bakery, This is a Modern .....Oct.—60
- Beer System Uses Circulated Air Cooling .....Oct.—48
- Book Review:
  - Air Conditioning .....Oct.—58
  - Air Conditioning and Elements of Refrigeration .....Aug.—86
  - Learning to Weld .....Mar.—62
  - The Home Freezer Handbook .....Mar.—62
- Bringing Home the Game .....Jan.—47
- Business, Getting Down to, by *Waylan Clarke* .....Jan.—40
- Buy from Dealer Who Maintains Your Appliance, by *Bert Merrill* .....Nov.—66

## C

- Calif. Group Reports on Ice Cream Equipment Law .....Nov.—50
- Servicemen Become Buyers of Trade-Ins, by *Bert Merrill* .....Dec.—40
- Centrifugal Compressor Uses Propane .....Sept.—54
- Constructing and Starting Air Conditioning Systems, by *J. N. Calhoun and F. M. Mayse* .....Jan.—35
- Questions and Comments on .....Feb.—41
- Code of Ethics, Guild Adopts .....Jan.—52
- of Standards Set Up .....Aug.—98
- Codes, NARC Surveys Safety .....July—70
- Coldspot Home and Farm Freezers, Construction, Operation and Servicing .....Jan.—33, Feb.—34, Mar.—37
- Refrigerators "Rear Motored" .....Aug.—100
- Constructing Suspended Ceilings .....Sept.—38
- Construction and Operation of Admiral Dual-Temp .....Oct.—34, Nov.—44
- and Service of Ammonia Compressors, by *W. G. McBride* .....Apr.—31
- Details of Cold Storage Fur Vault .....Mar.—51
- Control of Refrigerant Feed With Electric Eye, by *Leroy Etzel* .....Sept.—45

- Cooled Water Boosts Employee Morale .....Sept.—49
- Cooler and Temprite System .....Aug.—62

## D

- Darkroom Problem, Inexpensive Solution to, by *Steven Porter Lathrop* .....Oct.—33
- "De-Mythifying" Superheat, by *John M. Schlemmer* .....Dec.—36
- Department of Commerce Issues Book .....Feb.—50
- Developing a Prospect File for Commercial Dealer, by *Herbert Hanley* .....Aug.—49
- Discoloration of Meats, by *J. H. Spence* .....Mar.—49
- Distribution of Refrigeration Can be Solved Through Service, by *H. T. McDermott* .....Apr.—37
- Driers, Heat Effects in, by *Walter O. Walker* .....Nov.—29
- Drying Methods, by *Walter O. Walker* .....Apr.—41

## E

- Eastman Kodak Low Temperature System .....July—62
- Evaporative Condenser, by *P. B. Reed* .....Aug.—34
- Ex-G.I. Goes to College .....Feb.—47

## F

- Farr Welcomed at San Francisco .....Aug.—52
- Foods, Things We Need to Know About, by *Donald K. Tressler* .....May—31, June—35
- Freezing Storage of Foods in Refrigerated Warehouse, by *T. E. Evans* .....Sept.—34
- Freon and Methyl, You Want .....Jan.—46
- Freon-22 in F-12 Units, Increasing Capacity With, by *H. B. Roberts* .....Sept.—31
- Frozen Rose Bushes .....Sept.—48
- Fur Vault, Construction Details of .....Mar.—51

## G

- General Motors' Train of Tomorrow .....July—36
- Getting Down to Business, by *Waylan Clarke* .....Jan.—40
- Good Will Builder Provides Free Service in Flooded Area .....Oct.—47
- Guaranteed—One Year or 90 Days? .....May—37
- Guild Adopts Code of Ethics .....Jan.—52

## H

- Hammond, Indiana, Ordinance .....Aug.—43
- Having Trouble Getting Supplies? by *Harold Melville Peer* .....July—49
- Heat Effects in Driers, by *Walter O. Walker* .....Nov.—29
- Pump in Chicago .....Nov.—51
- Hermetic Analyzer, New .....Jan.—54
- Line of Kelvinator and Leonard Units .....May—38, June—40
- High Speeds Need Refrigeration .....Feb.—50
- Home and Farm Freezer Production .....Feb.—33
- Shipments for 1946 .....July—60
- Home Freezer Manufacture .....Aug.—82
- Market Needs Spadework .....July—58
- Home Precipitron in Production .....Jan.—84

# I

Ice Skating Rink Built Under Space	
Limitations	Sept.-47
Rinks, Preventive Measures for Failure of	
Piping in, by Paul S. Park	June-60
Rinks, Special Equipment for, by Edward Davis	Nov.-33
Surfaces, by Edward Davis	Oct.-29
Importance of Recording Serial Number	Jan.-50
Increasing Capacity with Freon-22 in F-12	
Units, by H. B. Roberts	Sept.-31
Industry Joint Engineering Committee Set	
Up Code of Standards	Aug.-98
Inexpensive Solution to Darkroom Problem, by Steven Porter Lathrop	Oct.-33
It Happens to Me, by J. W. Langford	Aug.-51
It is Less Hazardous to Raise Prices, by W. F. Schaphorst	Jan.-39

# K

Kelvinator and Leonard Units	May-38, June-40
Kold-Hold New Production Method	Nov.-38

# L

Life of a Counter Man	May-58
Locker Plant Construction Bulletin	July-68
Los Angeles Contractors Issue Warning	Oct.-56
Low Cost Operation, Servicing Equipment for, by Edward Davis	Aug.-31
Temperature System, Eastman Kodak	July-62
Temperature Systems, Refrigerant Control for, by F. Y. Carter	Jan.-38

# M

Managing and Operating the Service Business, by W. C. Irving	Mar.-29
Meats in Display Cases, Discoloration of, by J. H. Spence	Mar.-49
Mobile Ice Skating Rink	Sept.-47
Moisture and Drying Methods, by Walter O. Walker	Apr.-41
More Light for Coolers, by J. C. Forbes	July-41
Motors, New Standards	Feb.-47

# N

NARC Activities	May-76
Reports on Licensing	Oct.-56
Reports Two More Local Affiliates	Nov.-50
Survey Shows 95% Sell Commercial	June-62
Surveys Safety Codes	July-70

## NEW AND IMPROVED APPLIANCES:

Alarm	Aug.-90
Aluminum Solder	Feb.-76
Analyzer	Nov.-90
A-P Valves	Nov.-90
Water Valve	Jan.-76
Appliance Tester	Sept.-86
Aquatower	July-90
Auger Bit	Mar.-80
Ben-Hur Freezer	Nov.-94
Brazing Paste	June-96
Rod	June-90
Calculator	Feb.-76, Oct.-80
Carrying Case	Oct.-84
Charging Bomb	Sept.-80
Hose	Oct.-82
Cleaner-Blower	Aug.-94
Collets	Feb.-76
Condensing Units	Oct.-82
Cooler-Carbonator	Feb.-80
Coolers	Apr.-84
Cooling Units	July-92
Coupling	May-84
Defrosting	Apr.-86
Dehydrator Kit	July-90
Dehydrators	Mar.-80, June-90
Deodorizer	June-90

Detect-O-Larm	Jan.-80
Dispenser	Oct.-84
Drier-Filters	June-94
Dynamometer	Sept.-84
Fan Timer	Jan.-78
Fin Coils	July-92
Fire Extinguisher	Sept.-82
Fittings	Sept.-86
Flarekops and Snap Locks	Jan.-76
Fountain	July-90
Freezer	May-82
Alarm	May-82
Frigidaire Unit	June-90
Frosted Food Cabinet	Apr.-84
Fruit Juice Vendor	Oct.-80
Vendor	July-88
Gasket Notcher	Oct.-82
Gauge	Sept.-86
Grinder	Mar.-80, Sept.-84
Grinding Kit	Feb.-76
Hermetic Analyzer	Aug.-96
Impact Tool	Aug.-92
Lathe	Sept.-80
Manifold	Apr.-86
Merchandiser	Apr.-86
Metal Hose	Aug.-94
Micromotor	June-96
Motorized Valve	June-94
Motors	June-92
Mullion Unit	Aug.-94
Non-Froster	July-90
Oil Separator	Aug.-96
Portable Crane	Feb.-78
Powrarm	Feb.-80
Precision Oiler	Aug.-96
Recorder	Nov.-92
Repair Kit	June-96
Reseating Frigidaire Low Side Float	
Needle	Sept.-80
Rodenticide	July-92
Screw Anchors	Oct.-84
Selector	May-84
Service Bar	Nov.-94
Sheet Metal Unit	Nov.-92
Silver Solder	May-82
Stainless Fitting	Jan.-80
Suction Check and Expansion Valve	Apr.-82
Tester	Aug.-92
Thermometer	Aug.-90, Nov.-90
Clip	May-82
Threading Machine	Aug.-90
Time Meter	Sept.-84
Tire-Trac	Jan.-80
Transformer	Apr.-82
Uniflare	Feb.-78
Vise	May-84
Water Bubbler	Jan.-80
Cooler	Sept.-82
Westinghouse Refrigerator	June-92
Wilson Freezer	Nov.-92
New Assn. of Air Conditioning Men	Aug.-86
Centrifugal Compressor Uses Propane	Sept.-54
Hermetic Analyzer	Jan.-54
Impact Tool Speeds Service	Dec.-34
Standards for Small Motors	Feb.-47
Water Detector Uses Infra Red Spectrometer	June-57

# O

Ohio School Sues 281	Sept.-55
150,000 Frozen Food Units Needed	Sept.-37
Opportunities in Reverse Cycle Heating, by Edward Davis	Feb.-29

# P

Plumbing and Pipe Fitting Contractors Form	
New Association	Mar.-62
Poorly Kept Refrigerators	Oct.-40
Presentation Folder Helps Win Contracts, by Herbert Hanley	June-54
Preventive Measures for Failure of Piping in Ice Skating Rinks, by Paul S. Park	June-60
Proposed Miami Ordinance	Dec.-47

## Q

### QUESTIONS AND ANSWERS:

Aerator Under-Powered .....	Nov.—58
Air Conditioning a Hospital .....	Oct.—54
Analysis of Sludge .....	Nov.—60
Beer Dispensing .....	Feb.—43
Building a Freezer .....	Nov.—64
Calculating Heat Loads .....	May—44
Check Valve Defective .....	Apr.—49
Comments .....	June—48
Cleaning Systems .....	Sept.—60
Comments .....	Nov.—58
Coil for Display Case .....	Feb.—44
Comments on Questions 760 (in Aug. 1946—P. 40) .....	May—44
Question 771 (In Nov. 1946—P. 30) .....	Jan.—44
Question 773 (In Nov. 1946—P. 31) .....	Jan.—44
Question 777 (In Dec. 1946—P. 44) .....	Mar.—56
Question 778 (In Dec. 1946—P. 45) .....	Jan.—44
Cooling Cream .....	Oct.—50
Drying with CO <sub>2</sub> .....	Oct.—54
Electric Circuit Feeds Back .....	Nov.—62
Failure After Defrosting .....	Mar.—60
Freezer Has Its Troubles .....	Apr.—49
From Diesel to Electric .....	Apr.—50
Frozen Food Cabinet .....	July—53
Comments .....	Sept.—58
Fur Storage Room .....	Dec.—53
Majestic Relay .....	Mar.—58
Mayflower Unit .....	June—49
Meat Cooler .....	July—52
Darkens in Case .....	July—51
Comments .....	Sept.—58
Dries Out and Compressor Sticks .....	Jan.—45
Comments .....	Mar.—56, May—44, June—48
Meter Miser Fails .....	Oct.—51
Methyl Job Stuck Up .....	Oct.—50
Comments .....	Dec.—52
Mills Hardening Cabinet .....	Sept.—60
Ice Cream Freezer .....	Nov.—60
Norge Float Defective .....	Aug.—60
Comments .....	Sept.—58
Returning Oil .....	Mar.—58
Comments .....	May—44
Should Fans Push or Pull? .....	Oct.—54
Soda Fountain Trouble .....	Sept.—58
Storage of Microfilm .....	Mar.—60
Temperature of the System .....	July—51
Turkey Storage Room .....	June—49
Water Cooling in Bottling Plant .....	Dec.—52
What Clearance for Pistons? .....	Aug.—60
Size Unit? .....	Feb.—43
Why Dryer Warms Up .....	July—52
York Ammonia System .....	July—53

## R

Refrigerant Control for Low Temperature Systems, by F. Y. Carter .....	Jan.—29, Feb.—38
Feed, Control with Electric Eye, by Leroy Eisai .....	Sept.—45
Refrigerated Safes .....	June—51
Refrigeration—A Basic National Necessity by Wm. B. Henderson .....	Dec.—31
Refrigeration and Air Conditioning Equipment, Shipments .....	Mar.—39, Apr.—54
and Air Conditioning Guild Elects New Officers .....	July—70
REMA Holds Spring Conference .....	Mar.—54
REWA and REMA Hold Joint Meeting .....	July—68
Discusses Future Business Operation .....	Apr.—57
REFRIGERATION SERVICE ENGINEERS SOCIETY:	
Alabama State Assn. Annual Meeting .....	Nov.—70
Third Convention .....	Jan.—56
Auburn, Me., Applies for Charter .....	Apr.—58
Baird, A. C., Dies .....	Oct.—66
Buckeye Assn. Busy on International Convention Plans .....	Nov.—74
Picnic .....	Aug.—68
California Assn. Meeting Sets Record .....	June—66
Meeting to Include 1st Coast Industry Exhibit .....	Feb.—54
Prepares for Record Meeting .....	Mar.—66
Canadian Meeting in March .....	Jan.—60
Central Pennsylvania Receives Charter .....	Oct.—64

Chapter Notes .....	Jan.—60,
Feb.—64, Mar.—68, Apr.—72, May—70, June—80, July—74, Aug.—78, Sept.—70, Oct.—68, Nov.—76, Dec.—78	
Chicago Holds Town Hall Meeting .....	Nov.—76
Coates, Thomas, Dies .....	Oct.—66
Dates for 2nd CARSES Meeting .....	Oct.—64
Davis, Roberta, Makes Appearance .....	Feb.—60
Eubanks Moves to New Quarters .....	May—62
Granite State Receives Charter .....	Aug.—70
Green Bay, Wis., Organizes .....	Sept.—64
Greenville Forms Chapter .....	Apr.—58
Hudson-Mohawk Demonstration .....	Aug.—76
Illinois Committees Meet .....	May—60
State Picnic .....	Aug.—74
10th Annual Convention Program .....	Sept.—66
Indianapolis Chapter Picnic .....	Sept.—66
International Committees .....	Sept.—64
Directors Plan Expanded Program .....	Nov.—72
Educational and Examining Board .....	May—64
Board Arranges for Speakers .....	Oct.—64
Fund Committee .....	Apr.—68
Interprovincial 8th Annual Meeting .....	Apr.—60
Iowa State Assn. Formed .....	Apr.—64
Board Meeting .....	July—72
Meeting Planned .....	Feb.—52
Kankakee Valley Adopts Constitution .....	Oct.—64
Ladies Auxiliary .....	Jan.—68, Feb.—70, Apr.—78, May—76, June—84, July—84, Oct.—74
Licensing Bill in Mass. Killed .....	June—84
Lima Sees Electric Evacuators .....	Sept.—70
Make Hotel Reservation Early .....	Oct.—62
Marion, Ohio, Receives Charter .....	Aug.—66
Midland Empire and No. Montana Hold Joint Meeting .....	Nov.—74
Mile High Tube Bending Contest .....	Feb.—56
New Chapters .....	Jan.—60, Feb.—62, June—78
Northern Indiana Charter Presented .....	Aug.—74
Ohio Chapters Organize .....	Feb.—58
Refrigeration Service in Good Old Days, by Geo. Schuid .....	Apr.—68
Seattle Chapter Grows .....	May—60
Southwestern Michigan Chapter .....	Aug.—74
Tenney Demonstrates Evaporator .....	Aug.—76
Three New Chapters in California .....	Mar.—64
Treasurer Doyle Proud Pappy .....	Nov.—68
Tri-County 10th Birthday Party .....	June—78, July—72
21 Ways to Kill Organizations .....	Oct.—66
Utah Aggie Members Graduate .....	July—72
Virginia State Association .....	Nov.—68
Winnipeg Receives Charter .....	Aug.—64
Wisconsin Has Successful Meeting .....	Apr.—66
Worcester Chapter in Own Home .....	Aug.—72
Refrigeration Solves Market Problem .....	Aug.—58
Reverse Cycle Heating, Opportunities in, by Edward Davis .....	Feb.—29
Water Heating .....	Aug.—55

## S

Scientists Study New Phenomenon .....	May—94
Sealed Unit Testing-Starting Device .....	July—68
Sears' Coldspot "Rear Motored" .....	Aug.—100
Service Business, Managing and Operating, by W. C. Irving .....	Mar.—29
Serviceman Named Harry, by E. F. Cassing .....	Aug.—54
SERVICE POINTERS:	
Blue Finish for Steel .....	Dec.—55
Bubble Solution .....	June—52
Bushing for Flare Block .....	Nov.—55
Capillaries Versus Floats .....	July—54
Capillary Tube Application .....	Mar.—47
Tubes Cause Noise .....	Jan.—42
Care of Motors .....	May—46
Catch It .....	Aug.—48
Changing G. E. to Capillary Tube .....	Sept.—51
Cleaning A Grindstone .....	Dec.—55
Cleaning Plastic Parts .....	Oct.—45
Compressed Air System .....	July—54
Cost of Guarantee on Used Boxes .....	Dec.—55
Cutting Hermetics Open .....	Aug.—48
Dehydrating in Boiling Oil .....	Sept.—50
Delco Hot Wire and G. E. Relay Interchange .....	Feb.—45
Demonstrating a Freezer .....	Nov.—54
Detecting Excess Oil .....	Jan.—42

Doping Threads on Fittings	Nov.—54
Driers in SO <sub>2</sub> Systems	Oct.—45
Electrical Test Device	June—53
Emergency Relay	Apr.—47
Flare Caps	Jan.—43
Gas Disposal and Oil Sump Unit	Aug.—47
Glycerine Solution for Filters	Feb.—45
Grunow Won't Pump	Sept.—50
Comments	Dec.—54
Hermetic Motor Color Chart	Apr.—47
Chart Correction	June—52
Indicator Light	July—55
Installation of Driers	May—47
Lapping Tool	Dec.—54
Locating Leaks	Jan.—43
Majestic Compressor	Sept.—50
Manifold Clip	Aug.—47
Motor for an Emergency	Mar.—47
Neutralizing SO <sub>2</sub>	Nov.—55
Recoloring Lead Wires	Oct.—46
Repairing Broken Drill Bits	Nov.—54
Hinges	Dec.—54
Ladders	June—53
Reversing Hermetic Motors	Apr.—47
Sag in Belt Mislaid Length	Oct.—45
Starting a Nut	Nov.—54
Thermometer Clamp	Oct.—45
Watch That Lock Screw	Nov.—54
Westinghouse Units	June—52
Servicing Equipment for Low Cost Operation, by Edward Davis	Aug.—31
Shipments, Air Conditioning and Refrigeration Equipment, Mar.—39, Apr.—54, Oct.—48	
Home and Farm Freezers for 1946	July—60
Simplified Calculation of Air Conditioning Loads, by Edward Davis	July—44
Special Equipment for Ice Skating Rinks, by Edward Davis	Nov.—33
Specialties Build Volume, by H. Hawley	Nov.—42
Storages, Zero Degree	June—46
Sub-Zero Test Cabinet	Oct.—38
Suspended Ceilings, Constructing	Sept.—38

## T

### TABLES:

Drying Power of Refrigerants	Apr.—42-45
Fluorescent Lamps by Temperature	July—41

# INDEX OF ILLUSTRATIONS

## A

Abrasive Selector	May—84
Activated Alumina Temperature Curves	Nov.—30
Admiral Checking the Primary Plate	Nov.—48
Checking Temperature	Nov.—49
Motor Windings and Relay	Oct.—37, Nov.—44
Secondary and Primary System	Oct.—34
Unit, Cutaway View	Nov.—45
Unit and Cabinet Wiring	Oct.—36
Unit Wiring	Nov.—44
Air Conditioned Bus	June—64
Conditioning Proposal Forms	June—55-56
Conditioning Recording Readings	Jan.—37
King Deodorizer	June—90
Allied Supply Company Party	June—100
All-Industry Show Committee	Nov.—102
Alter, Harry, Display	July—96
Ammonia Compressor Crankshaft, etc.	Apr.—33
Piston and Suction Valves	Apr.—32
Analyzer by Friese and Tucker	Jan.—54
Anslu Fire Extinguisher	Sept.—82
Appliance Display in Bank	May—48
Tester	Sept.—86
Applying Insulation to Ceiling	Sept.—38
Aquatower	July—90
Army Ice Cream Plant Views	Aug.—38
Automatic Products Co. Valve	Nov.—90

## B

Ben-Hur Freezer	Nov.—94
Berkroy Unit	Nov.—94

Home and Farm Freezer Production	Feb.—33
Kelvinator Oil & Refrigerant Data	May—41
Leonard Oil and Refrigerant Data	May—42
Light Output of Fluorescent Lamps	July—42
Shipments of Home and Farm Freezers	July—60
Refrigeration and Air Conditioning Mar.—39, Apr.—56, June—47, Oct.—49	
Storage Properties of Foods	May—33
Take the Guess Out of Estimating, by Donald F. Daly	Apr.—51, May—49, June—31, July—38, Aug.—39, Sept.—40, Oct.—41, Nov.—39, Dec.—47
Telephone My Car for Service	Oct.—47
Testing—Starting Device, Sealed Unit	July—68
Things We Need to Know About Foods, by Donald K. Trezzler	May—31, June—35
This Is a Modern Bakery	Oct.—60
Too Much Business, by Donald F. Daly	Mar.—40
Trawler "Deep Sea"	July—64
Trip with a Btu	Aug.—50

## U

U. N. Hall Cooled by Skating Rink Equipment	Oct.—47
Use of Plastics in Refrigerators	June—86

## W

War Born English Firm Converts to Refrigeration	Sept.—52
Water Detector Uses Infra Red Spectrometer	June—57
Wax in Oil-Refrigerant Mixtures	Mar.—82
West Coast Wholesaler Modernizes	Dec.—38
Wholesalers Hold 2nd Annual Golf Tournament	July—66
Wyoming Tax Bill Killed	Mar.—62

## Y

You Want Freon and Methyl	Jan.—46
---------------------------	---------

## Z

Zero Degree Storages	June—46
----------------------	---------

## C

Brine flow Reversing Valves	Nov.—35
Bruno Auger Bit Set	Mar.—80
Call Ticket	Mar.—33
Carrier Unit Using Propane	Sept.—54
Cascade System	Jan.—30
Central Refrigeration Wholesalers Assn. Golf Tournament	July—66
Century Thread King	Aug.—90
Charging Bomb	Sept.—80
Hose	Oct.—82
Checking Pressures	Aug.—31
Cleaner-Blower	Aug.—96
Coldspot Freezer, Capillary System	Jan.—34
Cold Control Well	Feb.—36
Range and Differential Adjustments	Feb.—35
Relay and Wiring Terminals	Feb.—34
Replacing Hinge Spring	Feb.—37
Temperature Indicator	Feb.—36
Cold Storage Room	June—37
Zone Tester	Aug.—92
Collets	Feb.—76
Compressor Used by English Mfr.	Sept.—53
Conduction Coefficients	July—46
Construction of Cold Storage Rooms	June—46
Control System for Darkroom	Oct.—33
Cooler-Carbonator	Feb.—80
Cooling Load Estimate Sheet	July—45
Tower	July—33
Units	July—92
Corlett-Turner Grinder	Sept.—84



## D

Detect-O-Larm .....	Jan.—80
Determining Heat Effects in Driers .....	Nov.—31
Discharge Valves and Safety Head for Ammonia Compressors .....	Apr.—36
Dispenser .....	Oct.—84
Drierite Temperature-Time Curves .....	Nov.—31
Driers, Installation of .....	May—47
Dynamometer .....	Sept.—84

## E

Ebco Water Cooler .....	Sept.—82
Electricatic Dehydrators .....	Mar.—80
Estimate Sheets for Cafeteria Job .....	May—50
Evacuating Unit for Truck Servicing .....	Nov.—43
Evaporative Condenser, Cutaway View .....	Aug.—35
Installed on Roof .....	Aug.—36
Internal View .....	July—35
Eversal Coupling .....	May—84
Fittings .....	Sept.—86

## F

Fan Timer .....	Jan.—78
"Finco" Coils .....	July—92
Fish Cold Storage Room .....	June—36
Flarekops .....	Jan.—76
Fluorescent Lights in Locker .....	July—43
Forced Draft Tower .....	July—34
Form for Recording Serial Numbers .....	Jan.—50
Freezer Alarm .....	May—82
Compartment of Hunting Trailer .....	Jan.—47
Sentry .....	Aug.—90
Frigidaire Unit .....	June—90
Frostaire Refrigerator .....	Nov.—98
Frosted Food O'Mat .....	Apr.—84
Frozen Fish Ready for Glazing .....	June—35
Fruit and Vegetable Storage .....	May—32
Fruit-O-Matic .....	July—88
Fur Vault Plan .....	Mar.—51

## G

Gas and Electric Shop, Van Nuys .....	Nov.—66
Disposal Plan .....	Aug.—47
Gasket Notcher .....	Oct.—82
Glass Jack, and Lee Keeley .....	Feb.—88
Glue Gun .....	June—53
Grinder .....	Mar.—80
Grinding Kit .....	Feb.—76

## H

Halstead, Byron, and Hugo Smith .....	July—96
Harderfrez Farm and Home Freezer .....	May—84
Hermetic Analyzer .....	Aug.—96
Hi-Boy .....	Nov.—92
Hockey and Sports Arena .....	Oct.—29
Home Freezing Future Meals .....	May—33
"Hot-Cold" Pipe .....	May—94
Household Precipitron .....	Jan.—84
Hunting Trailer .....	Jan.—47

## I

Ice Skating Rinks, Constructing Floor .....	Oct.—30-31
Desirable Temperatures for .....	Nov.—34
Impact Tool .....	Aug.—92, Dec.—34
Indicator Light .....	July—55
Installation of Driers .....	May—47
Insulating Suspended Ceilings .....	Sept.—38-39
International Harvester Group .....	Jan.—86

## J

Jack & Heintz Condensing Units .....	Oct.—82
Condensing Unit Stand .....	Oct.—97
Engineers Give Demonstration .....	Nov.—74-100
Jamison Plant .....	Sept.—92

## K

Kasson Rotomotor .....	June—92
Keeley, Lee, and Jack Glass .....	Feb.—88
Kelvinator and Leonard Late Model Compressing Unit .....	May—39
Models HS and HD Cycle .....	June—42

Moist Master and Hi-Humid Cycle .....	June—44
1938 Refrigerating Cycle .....	May—40
1938 Relay and Wiring Diagram .....	May—40, June—40
1938 Sealed Compressing Unit .....	May—38
1938 Terminal to Terminal Diagram .....	May—43
1940, 1941, 1942 Wiring Diagrams .....	June—43
1946 Wiring Diagram .....	June—45
Kline Organization .....	Feb.—47
Kold-Hold Production Method .....	Nov.—38

## L

Langsenkamp, F. S., and his Ercoupe .....	July—50
Liquid Carbonic Plant .....	July—100
Logan Lathe .....	Sept.—80
Longford Engring. Co. of England .....	Sept.—52

## M

Majestic Compressor .....	Sept.—50
Manifold .....	Apr.—86
Clip .....	Aug.—48
Marsh Duo-Temp Thermometer .....	Nov.—90
McCafferty, C. A. .....	Feb.—88
Measuring Oil Level .....	Mar.—38
Micro-Gas Analyzer .....	Nov.—90
Micromotor .....	June—96
Midwest REWA Annual Meeting .....	June—84
Mobile Ice Rink .....	Sept.—47
Motorized Valve .....	June—96
Multi-Stage Systems .....	Jan.—29

## N

NARC Dinner Dance .....	Aug.—53
-------------------------	---------

## P

Peerless Cooler .....	Apr.—86
Perfecold Beverage Coolers .....	Sept.—94
Philco 7 cu. ft. Refrigerator .....	Sept.—96
Piping Arrangement of Ice Rink .....	Sept.—47
Pistons and Suction Valves of Ammonia Compressor .....	Apr.—32
Portable Crane .....	Feb.—78

## PORTRAITS:

Baldwin, John .....	Mar.—90
Branson, Lem. V. .....	Apr.—88
Burt, Harold R. .....	Dec.—98
Busby, H. D. .....	May—64
Byth, D. R. .....	July—94
Cohler, I. H. .....	Sept.—98
Comstock, M. E. .....	Dec.—94
Coyle, Thomas .....	July—96
Daly, Donald F. .....	Apr.—51
Fenwick, A. M. .....	May—64
Fox, L. G. .....	Nov.—105
Freitas, L. J. .....	Nov.—105
Haag, F. A. .....	Oct.—96
Haefner, E. W. .....	Feb.—86
Hatcher, C. M. .....	Mar.—92
Helminak, J. J. .....	Dec.—51
Holyoake, P. B. .....	Mar.—88
Hood, F. J. .....	Mar.—82, Oct. 88, Dec.—64
Houghton, R. L. .....	Jan.—86
James, B. E. .....	July—100
Knight, V. C. .....	Sept.—94
Kohnstamm, F. R. .....	Dec.—98
Krantz, H. F. .....	June—102, Dec.—100
Legler, Jos. B. .....	Dec.—96
Lindsay, H. W. .....	May—92
Mandery, Dan .....	June—102
Marshall, F. J. .....	June—102
Matthias, L. D. .....	Feb.—88
Matthes, L. H. .....	Nov.—104
Merryman, C. .....	Sept.—96
Money, R. H. .....	Jan.—88
Moore, R. T. .....	Apr.—92
Moravec, James G. .....	Oct.—98
Newcomb, Harry .....	Jan.—88
Palmer, S. H. .....	Sept.—96
Parr, T. E. .....	Nov.—104
Pendergast, T. L. .....	July—98
Raney, E. C. .....	July—94
Reed, P. B. .....	May—64
Reider, R. E. .....	May—90
Rhoy, T. F. .....	Dec.—98
Ricker, Albert A. .....	Dec.—96



Robson, F. Neil	Mar.-90
Roche, George J.	Apr.-57
Rosenmiller, J. L.	May-64
Roth, L. P.	May-64
Sawyer, A. F.	May-64
Schmitz, A. M.	May-64
Schuld, George	Apr.-68
Scott, J. P.	July-98
Siegrfried, W. A.	Dec.-94
Smith, H. C.	July-98
Smith, K. W.	Feb.-88
Spence, J. H.	May-64
Sullivan, A. D.	May-92
Teree, B. R.	Mar.-90
Walker, W. O.	May-64
Walsworth, F. H.	Mar.-72
Wheeler, G. W.	Oct.-96
Wilmes, C. W.	July-98
Wilson, George	Dec.-94
Wright, Jr., L. K.	Jan.-84
Yates, Olin C.	Apr.-92
Zumbrun, A. Z.	June-96
Powarm	Feb.-80

## R

Range and Differential Adjustments on Cold-spot Freezers	Feb.-35
Rankin's Super Market	Aug.-58
"Rapid" Dehydrator Kit	July-90
Recorder	Nov.-92
Recording Gauge	Sept.-86
Reflector for Fluorescent Lamps	July-42
Refrigeration Condensing Unit Mfrs. Assn. Group	Mar.-86
Contractors Assn. of No. Calif. Directors' Meeting	Aug.-52
Engineering, Inc. Production Lines	Apr.-90
REMA Officers and Directors	May-54
President and Past President	Nov.-102
President and Retiring President	May-56
REWA Officers and Directors	May-86
Past Presidents' Dinner	May-86

## REFRIGERATION SERVICE ENGINEER SOCIETY

Alabama State Meeting Views	Jan.-58
Arrowhead President and Past Pres.	Nov.-76
Azalea City Banquet	Mar.-70
Border Cities Charter Dinner	July-76
Buckeye State Assn. Views	Mar.-72
Picnic	Aug.-68
Calgary Dinner Dance	Nov.-78
Meeting	Sept.-70
California Association Banquet	June-74
1947-48 Officers	June-68
Receives Charter	Mar.-66
Canadian Capitol Chapter	Jan.-64
Canton Regional Advertisement	Feb.-62
Central Connecticut Banquet	Apr.-72
Chicago Chapter Officers	Feb.-64
Picnic	Oct.-68
Cintron Refrigeration Service	June-80
Columbus Christmas Party	Jan.-66
Cow Town Banquet	Apr.-74
Educational Fund Committee	Apr.-68
Eubanks New Location	May-62
First Western Industry Exposition	June-66
Opened Exhibits	June-70-72
Furniture City Picnic	Nov.-80
Granite State Charter Dinner	Aug.-70
Greenville Officers and Members	July-78
Hinds, Jr. Charter Presentation	June-80
College Training Shop	June-80
Hub Chapter Group	Mar.-64
Illinois State Assn. Committee	May-62
Interprovincial 8th Annual Meeting	Apr.-60
Iowa State Assn. Views	Apr.-64
Joplin Charter Presentation Meeting	Feb.-66
Kankakee Valley Chapter Members	Nov.-82
Kern County Dinner-Dance	Nov.-84
Madison Chapter Members	Apr.-68
Map of Territorial Jurisdiction	May-68
Mile High Tube Bending Contest	Feb.-56
Montgomery Chapter Letter	Sept.-68
Montreal Chapter Dinner Party	May-72
New England States Meeting	Jan.-62
North Montana Chapter Dinner	Aug.-74

Peninsula Charter Presentation	Feb.-68
San Gabriel Organization Meeting	June-76
Seattle Charter Presentation	Aug.-68
Presented by Secy. McDermott	Aug.-68
Southwestern Michigan Officers	Aug.-74
Personalities	Aug.-74
Sunshine City Chapter	
Dance	Feb.-66, Sept.-74
Tenney Demonstrates Glass Evaporator	Aug.-76
Toledo Chapter Fish Fry	May-76
Trenton Chapter Dinner	July-82
Tri-County Birthday Dinner	July-74
Virginia Tube Bending Contest	Nov.-88
Winnipeg Charter Presentation	Aug.-66
Wisconsin State Assn. Views	May-70
Worcester Chapter Headquarters	Aug.-72
Yockey, Earl, and Jack Croushore	Aug.-66
Refrigeration System with Aquamiser and sub-cooling Coil	Feb.-42
Relay of Coldspot Freezer	Feb.-34
Remco Drier-Filters	June-94
Repair Kit	June-96
Replacing Hinge Spring on Coldspot	Feb.-37
Restrictor	Oct.-35
Reverse Cycle Refrigerant and Air Flow	Feb.-30-31
Rigidbilt Plant in Chicago	Oct.-90
Running Cycle	Jan.-31
Time Meter	Sept.-84

## S

Sectional View of G. E. Train	July-36
Service Contract Form	Dec.-42
Serviceman's Invoice	Mar.-34
Shop Tag	Mar.-34
Card	Mar.-33
Silica Gel Temperature-Time Curves	Nov.-29
Silver Solder	May-82
Simons Co. Show and Luncheon	June-98
Snaplocks	Jan.-76
Solubilities of Water in F-12, Methyl Chloride & Methylene Chloride	Apr.-41
Spray Pond	July-32
Stainless Fitting	Jan.-80
Sub-Zero Test Cabinet Construction	Oct.-39
Summer Cooling Estimate Sheet	July-48
System for Heating Brine with Steam	Nov.-36
Melting Ice with Hot Water	Nov.-36

## T

Tal-Co Fountain	July-90
Tele-Juice	Oct.-80
Temperature Indicator on Coldspot	Feb.-36
Tenney Check and Expansion Valve	Apr.-82
Mullion Unit	Aug.-94
Terminal Board	Mar.-47
Test Lamp and Starting Leads	May-43
Testing and Starting Device	July-68
for Trouble in Thermostat	June-41
Thermal Company New Quarters	Sept.-90
Thermometer	Aug.-90
Clamp	Oct.-45
Time-Temperature Graphs	Sept.-35
Tire-Trac	Jan.-80
Transformer	Apr.-82
Trawler "Deep Sea"	July-64
Twin Cities Refrigeration Contractors Assn. Board of Directors	Mar.-84
Two-Stage Condensing Unit	Jan.-78
Tyler Dough Retarding Box in Bakery	Oct.-60

## U

Uniflare	Feb.-78
Uniflex Metal Hose	Aug.-94

## W

Wagner Motor Kit	Aug.-100
Walk-in Storage Room	Sept.-48
Water Bubbler	Jan.-80
Transfer Cycle	Feb.-32
Valve	Jan.-78
Watco Float Reseating Tool	Sept.-80
Westinghouse Refrigerator	June-92

Ace Cabinet Corp.	102	Kelvinator (Div. of Nash Kelvinator Corp.)	61
Acme Products Co.	97	Kerotest Manufacturing Co.	75
Airco Refrigeration Parts	103	Keystone Engineering Corp.	109
Airo Supply Co., Inc.	105	Kold-Hold Manufacturing Co.	8
Alco Valve Co.	9	Kramer Co., Fred C.	106
Alter Co., The Harry	105	Kramer-Trenton Co.	73
Ansul Chemical Co.	1	Liquid Carbonic Co.	28
Automatic Heating & Cooling Supply Co.	104	Logan Engineering Co.	25
Automatic Products Co.	58 and 59	Lynch Manufacturing Corp.	21
Bacharach Industrial Instrument Co.	14	Marlo Coil Co.	77
Barkdale Compressor Service	109	Marsh Corporation, Jas. P.	24
Ben Hur Mfg. Co.	95	McIntire Connector Co.	5
Betz Corp.	4	Mechanical Enterprises	79
Black, Sivalls & Bryson, Inc.	85	Mills Industries, Incorporated	7
Blythe Co., H. W.	104	Modern Design Products Co.	89
Chase Refrigeration Supply Co.	106	Mueller Brass Co.	81
Chicago Eye Shield Co.	89	Peerless of America, Inc.	23
Chicago Seal Co.	Inside Front Cover	Penguin Products	109
Chicago-Wilcox Manufacturing Co.	102	Premier Co., The	91
Commercial Trades Institute	99 and 101	Ranco, Inc.	26
Conservative Gas Corporation (Modern Gas Division)	87	Refrigeration Control Service	107
Cutler-Hammer, Inc.	69	Refrigeration Maintenance Corp.	107
Davison Chemical Corp.	Inside Back Cover	Refrigeration Service, Inc.	104
Detroit Air Conditioning Institute	97	Refrigerative Supply, Inc.	105
Detroit Lubricator Co.	2 and 3	Remco, Inc.	18 and 19
Detroit Sealed-In Parts Co.	107	Rempe Co.	101
Du Pont de Nemours & Co., E. I. (Electrochemical Dept.)	6	Republic Electric Co.	106
Ebeo Manufacturing Co., The	93	Republic Molding Corp.	97
Edison Cooling Corp.	109	Sanitary Refrigerator Co.	93
Electricmatic	71	Schnacke, Inc.	97
Exchange Mart	107	Sealed Unit Parts Co.	108
Gamma Electric Co.	97 and 99	Servel, Inc.	102
G & E Equipment Supply Co.	106	Service Parts Co.	105
General Controls	102	Shank Co., Cyrus	101
Halstead & Mitchell	20	Shawnee Products, Inc.	99
Harco Equipment Co.	87	South Bend Lathe Works	83
Hasco, Inc.	103	Standard Refrigeration Co.	63
Heat-Exchanger Co., Inc.	12	Supreme Mfg. Co.	107
Henry Valve Co.	16	Temprite Products Corp.	15
Higslide Chemicals Co.	10	Therma Co., Inc.	104
Imperial Brass Mfg. Co., The	11	Tinit Manufacturing Co., Inc.	101
Ingersoll-Rand	17	United Speedometer Repair Co.	109
Jack & Heintz Precision Industries, Inc.	30	Universal Cooler Div.	67
Jamison Cold Storage Door Co.	65	Utilities Engineering Institute	85
Jarrow Products	99	Utility Thermostat Co.	108
Jewett Associates	91	Virginia Smelting Co.	13
		Wagner Tool & Supply Corp.	22
		White-Rodgers Electric Co.	Back Cover
		Wholesale Refrigeration Repair Co.	108

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